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THE PROBLEM OF FORM

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IN

PAINTING AND SCULPTURE

BY

ADOLF HILDEBRAND

TRANSLATED AND REVISED WITH THE AUTHOR'S CO-OPERATION

BY

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WITH THIRTY ILLUSTRATIONS AND A PORTRAIT OF THE AUTHOR

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ADOLF HILDEBRAND [1]

was born in Marburg, Germany, October 6, 1847. His father, the economist, Bruno Hildebrand, was forced by the revolution of 1848 to seek in Switzerland freedom from political persecution. Having reached school age, the son attended the gymnasium of Bern, but did not show much enthusiasm for the abstract studies there offered to him. In 1861 his father was called to the University of Jena. The young man now showed such distinctive signs of artistic ability that he was sent by his father to Nuremberg, to take a course in the art school of that city.

At the end of 1867 he left Germany for a prolonged stay in Italy. The influence of the masterpieces of art accumulated in that country proved to be infinitely more beneficial to his artistic development than the school instruction which he had practically out-grown when he entered the art school. In Rome Hildebrand became acquainted with Hans von Marées, whose independence of thought encouraged the younger artist to follow his own bent. After staying in Rome a year and a half Hildebrand returned to Germany and busied himself for some time with sculpture in Berlin. In 1872 he went again to Italy and for many years stayed

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[1] The above biographic sketch is an abstract from the book by A. Heilmeyer.: *Adolf Hildebrand*, Künstler-Monographien No. 60, Velhagen & Klasing, 1902; pp. 99, 75 cts. The book contains nearly a hundred reproductions of the artist's own works.

in Florence, where he still spends a part of each year, his residence being an old monastery, San Francesco di Paola. His German home is in Munich. Whoever has visited this city in recent years cannot have failed to see and admire there one of Hildebrand's monumental works, the Wittelsbacherbrunnen on the Maximiliansplatz.

The present book appeared in print for the first time in 1893. It has been published in four German editions and has also been translated into French.

FOREWORD TO THE THIRD EDITION

This third and revised edition of my book affords me the opportunity of suggesting to the reader in a brief foreword the right mode of approach. I have, therefore, thought it advisable to present here in a few words the leading idea of my work.

The leading idea.

Sculpture and painting in contrast with architecture are usually looked upon as imitative arts. This classification, however, expresses merely their differences and does not take into consideration their resemblances. Sculpture and painting are, indeed, imitative inasmuch as they are based on a kind of study of Nature. And this in a way ties down the artist; for it follows that the problems of form with which he has to deal when imitating emanate directly from his perception of Nature. But if these problems and no others be solved, i. e., if the artist's work claims attention merely on these grounds, it can never attain a self-sufficiency apart from Nature. To gain such self-sufficiency the artist must raise the imitative part of his work to a higher plane, and the method by which he accomplishes this I should like to call the Architectonic Method. Of course, I do not here use the word **architectonic** in its ordinary special significance. As in a drama or symphony, so here our perception enables us to realize a unity of form lacking in objects them-

The architectonic method.

selves as they appear in Nature. It is the quality essential to this realization which I wish to denote by the term architectonic.

The problems of form arising from this architectonic structure, though they are not given us immediately and self-evidently by Nature, are yet the true problems of art. Material acquired through a direct study of Nature is, by the architectonic process, transformed into an artistic unity. When we speak of the imitative aspect of art, we are referring to material which has not yet been developed in this manner. Through architectonic development, then, sculpture and painting emerge from the sphere of mere naturalism into the realm of true art.

The architectonic development of nature's material.

Reviewing the artistic production of earlier times, we find that the architectonic structure of a work of art stands out everywhere as the paramount factor, whereas mere imitation is a thing which has only gradually developed. It is, in fact, instinctive with us to combine the piece-work of perception into an ideal whole. Mere imitation, on the contrary, being dependent on long experience, can only be attained through a gradual study of Nature. It is significant of our scientific times that a work of art to-day seldom rises above the level of imitation. The architectonic feeling is either lacking entirely or is replaced by a purely external, more or less tasteful, arrangement of forms. It has been my aim in this treatise to force the

The primacy of the architectonic conception and its relation to artistic individuality.

idea of the architectonic structure into the focus of attention, to develop from this point of view the problems which form presents and to show their immediate dependence on our relation to Nature. Let it be noted, however, that this dependence does not exclude an artist's individuality. Heart and lungs are requisite for life, yet this necessity does not preclude individual variations in the human body. A person's individuality does not consist in the presence or absence of particular organs, but in their various degrees of development. Just as we are able to demonstrate on what the soundness of a body depends, so may we also demonstrate the nature of the general problems of art and their solutions without excluding the artist's individuality. For, whatever his individuality may be, his work must give a true answer to the questions which Nature puts to him.

It is evident that in accordance with the artist's personal development this or that problem will dominate and become the main one to be solved. In no case, however, is artistic ability manifest in wilfully ignoring the requirements of the material worked in. Those artists who deny any kind of objective demands are the anarchists of Art, and are not to be taken seriously. It is characteristic of these artists that their incapacity to develop in architectonic manner that which they strive to achieve through imitation alone, should awaken in them a vague sense of inefficiency; and that they should seek to compensate for this by the addition of something suggestive or symbolic, intending thereby to raise their work to a higher poetic plane. But sculpture and painting do not

The anarchists of art.

borrow their poetic force from other arts, nor do they exist merely to illustrate poetic subjects. What the artist has to grapple with is a problem of visual manifestation solely. The subjects which he selects for representation need have neither ethical nor poetic significance. What he does is to give them an esthetic significance which is distinctive and no less valuable.

Let us now leave these general considerations and turn to the special consideration of architectonic structure in painting and sculpture. In both these arts all forms, whether arising from imitative productivity or from architectonic structure, are of a spatial character. Hence the principles governing the construction of such forms cannot be arbitrary, but must come from our perception of space. The artist's activity consists, then, in further developing such of his faculties as provide him with spatial perception, namely his faculties of sight and touch. These two different means of perceiving the same phenomenon not only have separate existence in our faculties for sight and touch, but are united in the eye. Nature having endowed our eyes so richly, these two functions of seeing and touching exist here in a far more intimate union than they do when performed by different sense organs. An artistic talent consists in having these two functions precisely and harmoniously related. To set forth the consequences of this relation has been my chief object in this work.

The two functions of the eye.

Since Art does not depend on a mere **knowing**, but on a **doing** which puts this knowledge into practice, a treatise on artistic problems can be fruitful only when it follows the artistic process in its practical, as well as in its theoretical aspects.

The process of artistic creation.

We must strive to understand clearly the connection between the artist's inner mental process and the realization of his ideas in his work. Unless we can show this mental process, demonstrate it, so to speak, **ad oculos**, then all insight into Art remains obscure and it is left to each individual to interpret the process this way or that according to the refinement of his senses. Finding that most theories of Art exhibit a useless quantity of reasoning and a dearth of practical experience, I have attempted to avoid this in my work by giving prominence, not to theoretical considerations, but to the actual process of creating a work of art. Accordingly, my book culminates fittingly in the chapter on stone carving; for work of this nature is, as a matter of fact, only the realization of all those artistic ideas which we shall treat in the chapters leading up to the last. The idea which informs the artist's creation is one thing, the process of the creation is another. The true connection between these two could scarce be understood except when placed at the end of the treatise. An insight into this connection seems all the more imperative since the technical progress and factory work of our day have led us to lose our appreciation of the manner in which a thing is made, and have caused us to value a product more for itself than as a result of some mental activity.

The importance which attaches to the natural growth of a work of art can hardly be overestimated. All that is good and true in Art depends on it. Art can flourish only when the artist follows the natural paths of production. Let him, then, get his result, however modest, by natural means, rather than strive to achieve something more brilliant, the outcome of a greater ability than he possesses; for such a work, being one of false pretense, must inevitably be condemned to the fate of all shams.

Natural growth in art.

INTRODUCTION

There is a definite relation between three-dimensional objective form, i. e., an object in Nature, and its appearance psychologically as a visual perception. The present work deals with this relation, and with the consequences thereof for artistic representation.

The aim.

Since one and the same object may produce many different visual appearances according as it is viewed from different positions and under different circumstances, there arises for the painter and for the sculptor this question: are all these views of equal value or, if not, how shall their varying values be measured?

The artist's question.

Our relation to the world of vision consists chiefly in our perception of its spatial attributes. Without this, orientation in the outer world is absolutely impossible. We must, therefore, consider our general spatial ideas and the perception of spatial form as the most important facts in our conception of the reality of things. If we distinguish the object from all the varying visual perceptions which may be obtained from it, then these visual perceptions must be taken as mere representatives of our ideas of space and things, and the value of any one view over all the rest will be determined only by the force with which it impresses on us these ideas of the thing in space.

The importance of ideas of space.

The variegated hues of Nature may be considered as a colored garment in which she clothes her body. But the value of these colors for artistic effect must also be measured in accordance with the part which they take in the spatial significance of the object.

The value of color.

We must, then, look upon Nature as affording us all possible variations in the perception of a certain object, yet without ever giving us the thing itself. For the idea of form which we may obtain is but one facet of the whole; one which we have abstracted from comparison of our different visual perceptions; one which, we may say, has resulted from a separating of necessary from chance elements. This idea is not merely one perception, but a working-over of many perceptions from one definite point of view. By this I do not mean a subjective, individual point of view, but, on the contrary, the very general point of view of spatial orientation such as each of us must, in the nature of things, construct for himself in his dealings with the outer world.

The idea of form.

In every-day life we require very few visual factors of spatial significance in order to feel at home in our spatial relations. We are not conscious how few, indeed, these factors often are, and how much our imagination adds to them. We are so familiar with most of what is presented to us that, given a few points, we grasp the situation at once. The artist, on the other hand, finds that his relation to visual per-

The significance of spatial suggestions in nature and art.

ception is quite different. He must, or should, be quite clear as to what the particular appearance actually presents and what it lacks to awaken in the spectator a definite idea of spatial form. At times certain illuminations are to be found in Nature, such as reflected light scattered over a surface, which dissolve every impression of form and thereby work against the possibility of gaining any clear spatial idea. So it cannot well be the artist's business to hold fast in his representation to the mere appearance of the object as such. He must learn, rather, from his visual perceptions how they come to express their form content. And this he does by learning to differentiate that appearance which speaks clearly to us from those others which do not. He dares not trust his representation to the knowledge of his spectators, but must actually present in his work all those factors on which our ideas of space rest. In doing this he must make use of the most fundamental facts of experience, of the so-called self-evident. Without a sufficient regard for these elementary factors representation becomes mere dilettantism.

The requirement of a clear expression for space and form in his work, leads the artist into a certain definite sort of mental imagery. In all periods of artistic endeavor, therefore, there must develop one fundamental method of looking from an artistic standpoint at the wealth of varying appearances found in Nature. This method, in brief, as it has become formulated through the personal experience of an artist, is the content of the following work.

The artistic viewpoint.

It is evident that the clear-sightedness which the artist finds essential to his work is, as with every other man who acts, not that of a knowledge mediated by words, but the result, rather, of a refined instinct. However, a written formulation such as this can scarcely be avoided, especially at a time when there is so much immaturity in the knowledge of artistic problems and so much uncertainty as to artistic instinct. So it becomes necessary to present successively, and to arrange logically, descriptive views of things which in reality are simultaneous, each dependent on the other and without beginning or end. Therefore this work speaks in an unaccustomed language to the artist, for whom these points of view are the most familiar facts of life, and speaks of an unaccustomed process to the esthetician, for whom the mode of speech is stock in trade. But for this failure to suit either exactly there is no help.

The discrepancies of a written communication.

I

VISION AND MOVEMENT

In order to understand the relation existing between form in its three dimensions and our visual perception,* we must first of all realize that we make use of our eyes in two different ways, the visual and the kinesthetic.†

Two ways of using our eyes.

Given an object with its surroundings and background; given also a line of vision on which an observer may take a position at varying distances from the object. Let the observer's distance be so far removed that his eyes no longer make an angle of con-

Pure vision.

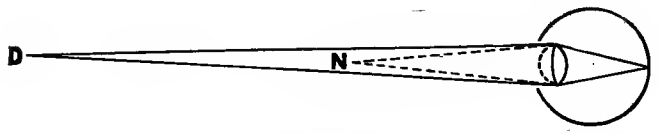


FIG. 1. ACCOMMODATION.

LIGHT COMING FROM A DISTANT POINT, D, IS FOCUSED AT THE RETINA BY A LENSE OF LITTLE CURVATURE. IF THE LIGHT COMES FROM A NEARER POINT, THE CURVATURE OF THE LENSE MUST INCREASE. THIS ADJUSTMENT OF THE LENSE IS CALLED ACCOMMODATION. IT IS PRODUCED BY MUSCLE FIBRES WITHIN THE EYE BALL. ACTIVITY OF THESE MUSCLES GIVES RISE TO A SENSATION, WHICH MAY BE CALLED THE SENSATION OF ACCOMMODATINO.

vergence on the object, but gaze parallel into the distance; thereupon the two retinal images become iden-

* The reader need hardly be reminded that our actual impression is two-dimensional, a flat picture on the retina.

† By kinesthetic we mean pertaining to sensations of movement, in this case, eye movement.

tical. The idea of a three-dimensional object, which the observer continues to hold, and which, until the observer reached this distance-point, was partially produced by stereoscopic vision (cf. pp. 26 ff.),—an idea, namely, that certain parts are nearer than others,—is now produced by factors which have only two dimensions, such as differences in color, light and shade, size, distinctness, perspective, fore-shortening, etc. These characteristics have been known to us from infancy as marks for distinguishing what is distant from what is near.

Vision plus movement.

Let the observer now take a position along this line nearer to the object. His eyes will then require a different accommodation of lens, and a different angle of convergence in order to perceive the object as clearly as before. Naturally, the whole object can no longer be seen at a glance. Instead of one complete picture, he now has several which he connects together by a swift succession of eye movements. The closer the observer approaches, the more eye movements will he have to make and the more will the original complete picture be split up into separate views. Approaching nearer and nearer to the object, his field of vision becomes more and more limited, until at length his eyes converge and focus only on one single point at a time. The observer's perception of the spatial relation existing between such points will then be derived entirely from eye movements in different directions, into different distances. Our ability to receive and understand a pure visual impression as such, illustrated by binocular-parallel and monocular vision, is now superseded by an abil-

ity to receive and understand by the aid of acts of movement. The accompanying figures will demonstrate to the reader the nature and significance of accommodation and convergence.

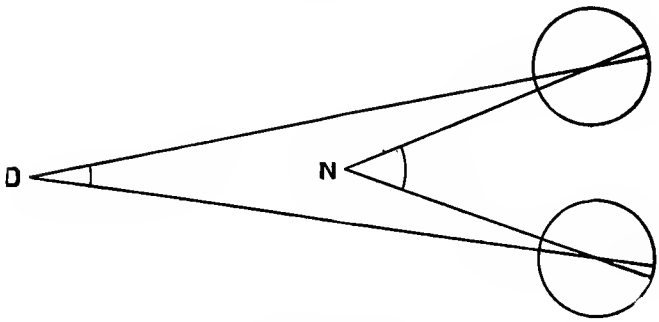


FIG. 2. CONVERGENCE.

THE AXES OF THE EYES, TO RECEIVE THE LIGHT OF AN EXTERNAL POINT, D, AT THE FOVEA, THE POINT OF MOST PERFECT SENSIBILITY, MUST FORM A DEFINITE ANGLE. THE NEARER THE POINT SEEN, THE GREATER THIS ANGLE, THE ANGLE OF CONVERGENCE THIS ADJUSTMENT OF THE EYES IS PRODUCED BY THE EXTERNAL EYE MUSCLES AND GIVES RISE TO THE SENSATION OF CONVERGENCE.

It must also be added that, aside from accommodation and convergence, movements of the head are often made for the purpose of bringing together successive perceptions of an object from different points of view.

Parallax.

Our eyes possess, therefore, two faculties of distinct character: one consisting in visual perception at a glance with the eye at rest, the other in a number of more complex perceptions made up of visual and kinesthetic factors which result from a series of movements. All our knowledge concerning the plastic na-

The combination of visual and kinesthetic factors.

ture of objects is derived originally from movements which we make either with eyes or with hands. And it is through a complex of such movements, or by so-called "kinesthetic ideas" of them, that we are able to imagine three-dimensional or solid form. Ordinarily in looking about we use our eyes in a manner depending on the distance of the objects seen; consequently our perception consists of visual impressions and eye movements which follow each other in more or less rapid succession. Taking this mode of perception as a whole we must look upon it as a combination of two different elements.

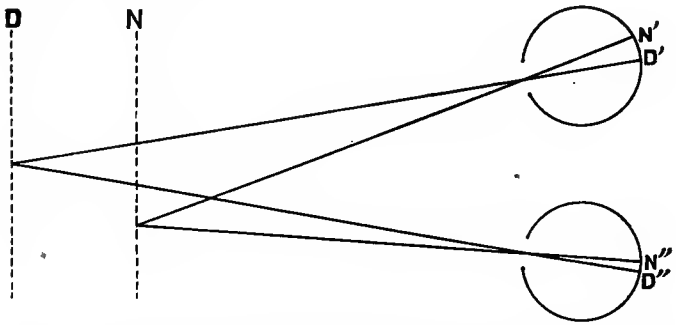


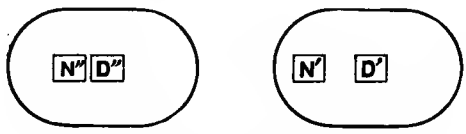
FIG. 3. STEREOSCOPIC VISION.

HOW LIGHT COMING FROM A DISTANT AND A NEAR POINT IS PROJECTED UPON THE RETINA. D' AND N' ARE FARTHER APART THAN D'' AND N''. THE FOLLOWING FIGURE SHOWS HOW THIS RELATIVE DISPLACEMENT APPEARS TO OUR CONSCIOUSNESS AS A VISUAL IMPRESSION.

Stereoscopic vision.

There is yet another combination, the so-called "stereoscopic vision," which is effective at not too great a distance from the object. Stereoscopic vision is nothing else in fact than a combination of two different pictures seen respectively by our two eyes at the same time. The difference—

disparity, as it is usually called—of these two pictures consists in the relative displacement of their details, caused by the two different positions of our eyes in regard to the object. Stereoscopic vision may, therefore, also be considered as a combination of visual impression and movement. Shutting one eye, we are able to take in the visual impression from the position of the open eye, move then to the position of the other eye and take in the other visual impression. Doing this, we get each time a simple picture of the object, as we



LEFT EYE'S IMAGE. RIGHT EYE'S IMAGE.

FIG. 4. STEREOSCOPIC VISION.

HOW THE TWO OBJECTS N AND D OF FIG. 3 APPEAR IN OUR RIGHT AND LEFT EYE'S IMAGES. IN THE RIGHT EYE'S IMAGE D APPEARS DISPLACED TO THE RIGHT, WHEN COMPARED WITH ITS SPATIAL RELATION TO N IN THE LEFT EYE'S IMAGE, ETC., ETC. (NOTE, THAT WHAT IS PROJECTED UPON ONE SIDE OF THE RETINA, AS IN FIG. 3, ALWAYS APPEARS TO US ON THE OPPOSITE SIDE.)

do from a distance where both eyes receive the same picture of the object. The two different positions of our eyes and the two images received, which co-operate in stereoscopic vision, become evident through an act of movement. Stereoscopic vision lends the strongest impression of three-dimensional existence. In painting, where we have to deal only with one picture of the object, stereoscopic vision is naturally excluded. If we speak, notwithstanding, of a stereoscopic impression of a painting, we mean only that a strong three-dimensional impression is given by the two-di-

mensional means which a picture has at its disposal, but we do not refer to stereoscopic vision in its special meaning.

Stereoscopic vision is important in life, but not in art. (Addition by the translators.)

Since infancy we have associated the idea of relative farness with visible details which are relatively displaced in the right eye's image to the right, in the left eye's image to the left. For instance, in fig. 5, the house which stands in line with the telegraph pole and the spectator, or any one of the neighboring houses, appears to the right eye considerably displaced to the right, relative to the pole; to the left eye displaced to the left. In such a case, as the result of the experience of our whole life, we immediately become conscious of the fact that the house is much farther away from us than the pole. On the other hand, we have associated the idea of relative nearness with details which are relatively displaced in the right eye's image to the left, in the left eye's image to the right (the pole as compared with the position of the house); and the idea of equidistance from us with details in which no displacement at all is noticeable. The latter case may be illustrated by pointing out that the distance from the house at the extreme left to the house at the extreme right is exactly the same in both pictures. But this binocular mode of perception is in art rather an obstacle than an aid; for in looking at a picture with both eyes we often become aware, through the perfect identity of both images in this case, i. e., through the absence of any displacement of details, of its being flat, its being nothing but colored spots on a plane surface. In such a case we may, by closing one eye, free ourselves from this interference with our mental reproduction of the spatial ideas intended by the artist. This remedy is made possible by the fact that we never see, of course, and never expect to see, any relative displacement of details while using one eye alone, there being no two images for comparison. The absence of such a disparity, therefore, no longer reminds us of a flat surface.

The perception of displacements, in binocular vision, may arouse in us by association kinesthetic ideas of accommodation and convergence such as we should normally obtain by viewing points at different distances successively. But, as we have seen,

FIG. 5. ILLUSTRATES THE RELATIVE DISPLACEMENT OF THE DETAILS IN "STEREOSCOPIC VISION."

stereoscopic vision is for the artist's mental activity never essential; for the spectator's mental attitude often positively injurious. The means used by the artist for calling up kinesthetic ideas in our minds are, as we shall see, of a different kind. Neither the artist, nor the layman who merely enjoys art, depends on stereoscopic vision—on the use of both eyes—for his mental relations to art. Some one has said that Raphael would have been a great artist even if he had been born without arms. It is still more true to say that no artist would be less an artist if he had been born with one eye only. His loss would consist in his inability to compare the spatial suggestiveness of binocular and monocular impressions, but his world of ideas would not be essentially different, for kinesthetic ideas of head and body movement would serve in place of kinesthetic ideas of convergence. The ability to compare the strength of binocular and monocular impressions may be of much aid to the artist who—normally—possesses it; but a comparative study of mental development leads to the conclusion that this ability cannot be regarded as one of the mental traits which make up artistic genius.

The visual projection.

When we close one eye it is as though we threw the object into a greater distance, i. e., we have then only one picture instead of two different ones. The simple, two-dimensional picture thus obtained we shall hereafter term a **visual projection (Fernbild**=distance picture).

Kinesthetic ideas suggested by the visual projection.

Having classified our optical perceptions into pure visual and mixed visual-kinesthetic (cf. p. 23) we may now examine more closely into the relations which exist between them. Since our ideas of three-dimensional form are so largely kinesthetic, it follows that, if the visual projection is to express a spatial content, it must contain suggestions, at least, of movements. Just as our eyes wander naturally

over the form of an object which is near us, so too in the visual projection are we naturally incited to imagine movements in accordance with such indications of form as are given. Although these movements are purely imaginary with respect to the third dimension or depth, they may very well be carried out with respect to the two dimensions of the picture plane. It is clear that our eyes carry out their function of wandering over all unforeshortened lines and surfaces of the visual projection just as if the object were before us. With respect to lines and surfaces in perspective, however, we cannot carry out the functions of accommodation and convergence, although the suggestion to do so may be present.

So much for the visual projection with reference to its latent kinesthetic content. We may now proceed to consider our kinesthetic ideas of eye movements with reference to the visual ideas which they awaken in us. Lines and simple planes are the inevitable associates of kinesthetic factors. When we present to ourselves the form of an object, such imaginary visual associates naturally attend our kinesthetic ideas of eye movements, and may, therefore, be looked upon as an expression for them. Unforeshortened lines and planes are, as has already been noted, a complete and satisfactory expression for certain kinesthetic ideas. And this is because our vision is in its very nature two-dimensional; so that by **a single intuition** we perceive all the flat elements of the natural scene imagined. Though we may have to let our eyes wander over it, the whole is still unified by this continuity

Visual ideas suggested by kinesthetic ideas.

FIG. 6 (P. 71), TITIAN. ILLUSTRATES THE EFFECT OF "DISTANCE AT THE PERIPHERY"

of vision from a single point of view. To perceive in visual images the third dimension, however, we must imagine ourselves as changing our point of view, and as getting **merely a succession** of disconnected shifting views of the object more or less in profile. Therefore in imagining a natural scene otherwise than as a visual projection, the expression of kinesthetic ideas by foreshortening, light, shade, color, etc., is unsatisfactory just in so far as its unity is spoiled by its demands for shifting. It is only in the visual projection that these demands cease, and permit the unitary plane picture to produce its full effect unspoiled. This constitutes the great value of the visual projection. It affords the only possible perception of form at a glance. For it is the only perception made up of homogeneous, i. e., purely visual, elements.

Ordinary representation and artistic representation.

Since our visual impressions of an object vary according to circumstances, it is natural that we should not be able to remember them all clearly at a given time. We are, for instance, able to conceive the three-dimensional form of a sphere, but hardly a clear visual impression of it. Our idea of the sphere is rather that of a two-dimensional circular line, plus an idea of movement by which this circle is repeated equally in all directions. Thus we are brought to acknowledge that, apart from individual variations in the distinctness with which men perceive form, the power of perceiving it visually is very vaguely connected with the power of representing it visually. For the percipient, the process of seeing, in the sense of reading-off spatially the appearance before

him, goes on quite unconsciously, interpreting the visual impression into a spatial idea. But in the process of representation he has to piece the object together, partly out of visual and partly out of kinesthetic elements: i. e., he places before himself some general visual picture and fills it out according to what may happen to be its plastic requirements. Visual impression and kinesthetic idea both relate to the same object, but usually bear no distinct, essential relation to each other. This want of definite relation between visual and kinesthetic elements in our usual representations need not surprise us; it is only the artist who in his representation really unifies these elements. In the artistic representation we may check and control the relation between our visual and our kinesthetic ideas, and the test, both of these our own ideas, and of the efficacy of the artist's work is—Do we react immediately to the impression received from this representation? All other intellectual disciplines leave us totally ignorant on this point, and with scant power of representation. This unity which the artist makes of visual impression and kinesthetic idea, is the most fundamental source of our esthetic enjoyment in a work of art.

Let us now consider from this point of view the activity of sculptor and painter. The sculptor's specific mental material consists in kinesthetic ideas. To these he gives expression by fashioning them out with his hands in solid material. The visual projection of this representation, when made, affords the spectator a unified idea of the form of the object. To accomplish this end

The activity of sculptor and painter.

is the sculptor's real problem. For it does not follow that forms which are expressive when perceived stereoscopically, or separately at close range, should continue to be so when presented in the visual projection. The unity of a sculptor's work must, therefore, depend on its pictorial clearness.

FIG. 7 (PP 72 and 83), CORREGGIO. ILLUSTRATES THE EFFECT OF "THE DIAGONAL ARRANGEMENT" AND "THE RELIEF CONCEPTION" IN PAINTING.

Considering the activity of the painter, we find that his mental material consists in visual ideas which he expresses directly on a surface, creating thereby a picture in the sense of a visual projection. His problem is to express the form of an object by means of mere visual impressions on a plane. To do this he

must discover what, in these visual impressions, is really suggestive of the third dimension. We see, therefore, that both sculptor and painter have to deal with the relation existing between visual impressions and kinesthetic ideas. The painter gives on a plane a visual impression of a three-dimensional form, while the sculptor forms something three-dimensional for the purpose of affording a plane visual impression.

The artist's problem.

Our ideas of form, in so far as we derive them from a visual projection or a picture, depend in reality on our vast experience of the relations existing between visual and kinesthetic sensations. The three-dimensional form of a solid object being one of the factors which contribute to the object's appearance, is related to the latter as cause to effect. Through conscious experience we acquire a knowledge of this relation, and its significance is forcibly present in all seeing creatures. Suppose an artist confronted with a particular object in Nature which he wishes to represent. His task is to do the work in accordance with the laws governing these relations. He must, therefore, consider this particular as a general case, i. e., as a concrete example of such relations as exist between visual and kinesthetic ideas. A work of art results from an adaptation and arrangement of natural objects. Such adaptation and arrangement simplifies our perception and conception of the objects and thus brings Nature into most intimate relation with our visual faculties. What kind of factors out of the infinite and varied stock which Nature presents the artist shall retain as those best adapted for his purpose

of suggesting ideas of form is a matter for his individual choice. But, at the same time, he is always bound to follow the laws which govern the relations existing between visual and kinesthetic ideas.

II

FORM AND APPEARANCE

In order to put these problems more exactly before the painter and sculptor, we must investigate still more narrowly the relation of the visual projection to kinesthetic ideas.

The problems.

As our kinesthetic ideas arise and develop in connection with the outlines of an object, we come to ascribe a form to it which is independent of the object's changing appearances. Form is that factor in our perception which depends only on the object. It is obtained either through movement direct, or is inferred from the appearance, and we may term it the **actual form.** On the other hand, the impression of form which is aroused by the visual appearance of the object is always a product, not only of the object's actual form, but of the illumination, the environment and the changing point of view. Being a variable expression for the abstract, non-changeable, actual form, it may be termed, in contradistinction therefrom, the **perceptual form.**

Actual and perceptual form.

It is essentially characteristic of the perceptual form that each single factor in the perception should have its meaning only in relation to all other factors; that all sizes, all lights and shades, all colors, etc., have only relative values. Everything depends on reciprocal relationships; everything influences the value of everything else. When we speak, there-

The mutual relationship of factors in the perceptual form.

fore, of a total impression, we refer to the effect produced by the co-operation of all the factors in the perceptual form. Since the visual projection makes possible this conception of factors co-operating to form a unity, it follows that the single parts of which it is made up can have no meaning in themselves alone, but gain their significance only through that

FIG. 8 (PP. 72 and 83), TINTORETTO. ILLUSTRATES THE EFFECT OF "THE DIAGONAL ARRANGEMENT" AND "THE RELIEF CONCEPTION" IN PAINTING.

peculiar connection which constitutes their total unity. Accordingly, whenever in tracing the effect of a certain total appearance we are able to conceive the form of the object, it is because of the relationships existing between the various factors of the appearance. Hence if we try to represent pictorially our idea of form with the hope of producing a satisfactory total appearance we cannot

succeed by translating kinesthetic ideas, piece by piece, into visual factors and then adding them together into one total appearance. In such a process we should not be considering at all the effects of the single factors as conditioned by their relations to the whole, but should be working, rather, as though each factor were perceived as isolated. We do not here deny the power of the spectator or of the artist as spectator to see at a glance everything represented on one canvas. We wish, rather, to emphasize the necessity of properly relating the parts of a picture in the process of composition.

The algebraic conception.

We may conceive the values of the actual form numerically. For, just as in algebra we abstract from the numerical values, and express only possible relationships of **a** to **b**, so the pictorial representation transforms all actual values to relative ones which have validity only for vision. In this way the equation between the actual and perceptual forms comes to exist.

The contrast of actual and perceptual form.

When I fixate visually a finger I obtain a relative impression of the shape and size of its parts. When I fixate the entire hand I see this finger in relation to the whole hand and obtain a new impression which expresses the relation of fingers to hand. When I attend to hand and arm the impression changes again, and so on **ad infinitum**. The hand may have looked large when I attended to it alone; in relation to the arm it may appear delicate because of the greater stength of the arm. At first the form of the finger was

considered as a total impression; later it became a relative impression with other co-operating forms. Yet the actual form of the finger remained constant. It was the perceptual form which changed. As a visual

FIG. 9 (P. 80), ANCIENT SCULPTURE. ILLUSTRATES THE CONCEPTION OF A LAYER OF UNIFORM DEPTH.

effect the object obtained a shifting accent which, when taken by itself, it did not possess. In this way the entire actual form resolves itself into visual relationships and values, and the idea of the object is transformed

into ideas of values for vision which have their meaning only in and through the given total impression.

Mere grouping may thus be sufficient to accentuate the value of the perceptual form in different ways.

The significance of situation.

We can, for instance, place equal lines in such positions that they look to be of different lengths. There are well-known geometrical figures which exhibit such illusions. It is clear, therefore, that the perceptual value of a single actual form may be one of three things: false, as in the example noted; indifferent (neutral), i. e., without emphatic accentuation; or, finally, strong and effective. In all these cases the actual form remains the same; the perceptual form, however, changes markedly. Whether, therefore, the perceptual form be thus or so, depends on the total situation, and may be, like the situation itself, stable or undergoing change. This is of the greatest importance in considering our impressions of form in nature. Since many objects are bound down to a particular situation, we know them only as certain well-defined perceptual forms. Any change in the situation seems to alter the actual form as well. A tower for example, which, rising free in the air above the housetops, makes such a slender, graceful impression, becomes at once short and clumsy in appearance when placed alongside a thin smokestack. Thus the relation of the object to its environment becomes a part of its characterization, and according as certain situations are associated in our minds with the idea of the object, we attribute certain characteristic accents to the actual form. We may speak of an exceptional accent and

a normal, a chance accent and a typical, according to the conception which we have acquired of the object. The artist enriches our intercourse with Nature so far as his individual talent enables him to bring the actual form into situations which lend it new but normal accents of effectiveness. The more normal and typical these accents are in a work of art, the more real is the importance of the work.

The perceptual form: its richness of content.

We have seen that the perceptual form is richer in content than the actual form by reason of the subjective relationships existing between its elements. These relationships serve to influence the visual idea which involuntarily arises when we think of the object. However poor and empty this idea may be, it is, at the very least capable of conveying to us a general notion that the object is essentially spatial. When children draw a face as a circle with two points for eyes, a vertical line for nose and a horizontal line for mouth, they represent in these few lines just the essential effect of our ordinary idea of perceptual form.

The elementary effects.

An artistic representation, to be strong and natural, must bring to bear, out of the embarrassing richness which Nature affords, and in spite of it, those elementary effects which correspond to our most general conception of form. In the human face, painted or chiseled, that which the child brings out by a few strokes must likewise be emphasized by the artist, as being the essential effect. Thus we see it exemplified in antique statues in the so-called Grecian type of face. The 'Grecian nose' is the

result of such a requirement. Not that the Greeks in general had such noses; the significance of these heads rests, rather, in the fact that they have, under all conditions, a clear-cut effectiveness and thus represent typical visual accents.

FIG. 10 (P. 83), REMBRANDT. ILLUSTRATES "THE RELIEF CONCEPTION" IN PAINTING.

Artistic sense consists in a clear comprehension of these values of form as opposed to a mere knowledge of the actual form. The latter would mean a sum of isolated sensations having significance only for scientific consideration. The general perceptual form, which is developed uncon-

Artistic sense.

sciously, must be distinguished from any particular memory image, since the former contains the essential, the latter largely fortuitous elements. Art consists in giving shape to these ideas of spatial values, thus taking what may have been in Nature insignificant and fortuitous, and rendering it expressive and inevitable. However, in order to be effective in a work of art, these elements must be so combined that each may have its full significance. Since in Nature it is entirely a matter of chance whether or not this condition is met in the appearance, an artistic representation cannot be a mere mechanical counterfeit of Nature, but must comply with those conditions which render visual values effective. Thus an artist's single representation is, in fact, an expression for the whole world of form as he has worked it out in his mind into effective spatial values.

Positivism in art.

The so-called positivistic conception of Art, which finds truth in a casual appearance or form of an object rather than in a perception as interpreted by our general ideas, sees the problem of Art merely in an exact reproduction of that which is to be directly perceived. It considers any influence of our interpretative faculty to be a falsification of natural truth and, therefore, concentrates its efforts on making the representation a most exact imitation; the more mechanical and automatic, the better. It strives to detach the momentary impression from our general ideas, notwithstanding the fact that, but for these, visual perception would be impossible. For we do not see mechanically; it is the contribution of

ideas which makes for us out of the retinal image a significant picture.

It matters not whether this rigid adherence to the objective part of a perception be applied to its kinesthetic or to its visual terms.

Its failure. There is a positivism with respect to the actual form as well as with respect to the perceptual form; and with respect to kinesthetic sensations in sculpture as well as with respect to visual sensations in painting. The height of positivism would be attained if we could perceive things with the inexperience of a new-born child. This theory would lead us to regard the sculptor's art as appealing exclusively to the tactual-kinesthetic sense of the esthetic percipient; the painter's art, on the other hand, as appealing entirely to the visual sense quite apart from all experience of form. The positivist seeks a representation which shall stand for the unclear expression of the first few hours of life, when ideas are first beginning to develop. This tendency has been fostered through the discovery of photography. But the fact is overlooked that we cannot strip off our ideas at will. It is just by the aid of these ideas that we see. Our unconscious dependence upon them effectually contravenes the tendencies of positivism. The inevitable result is that the spectator finds suggestions for spatial ideas pitifully scarce in such a work instead of plentiful as they should be. Such pictures are, so to speak, dumb, because the capacity of appealing to our idea of form has been artificially expelled from them.

In true Art the actual form has its reality only as an effect. By conceiving Nature as a relation of kinesthetic ideas to visual impressions, all combined and interrelated in a totality, Art frees her of change and chance. Therefore it is a naive misconception to believe that the effec-

The invalidity of proportions.

FIG. 11. (P.83), TITIAN. ILLUSTRATES "THE RELIEF CONCEPTION" IN PAINTING.

tive value of a figure in a given work of art would remain constant if the position of the figure were changed. The identity of the person is then mistaken for an identity of effect. From this, too, it follows that all the instructions in proportion which have been

formulated for Art have arisen out of a fundamental misconception. The requisite proportions must be worked out each time anew with respect to the work as a whole. No work of art can result from a simple addition of invariable proportions in details. Only in such works of art as constantly repeat their parts in the total arrangement, for instance, in a Greek temple, can approximately constant proportions for the single parts be laid down. These relations are the result of a fixed total project. If this falls away, so do the proportions for the single members, and in their new connections they must be found anew.

Relation to effect.

Furthermore, it is also explained by the above that in sculpture the proportions of the actual form must sometimes be subordinated to the effect of the main view, as is illustrated, for instance, in the short foot of the Faun of Praxiteles.

III

THE IDEA OF SPACE AND ITS VISUAL EXPRESSION

In the preceding chapter we have considered the relation of visual perception to the ideas of spatial form, particularly with respect to objects. We must now do the same with respect to the total spatial form of Nature at large. By **total space** we mean space as extending through all three dimensions, or in all directions. The essential factor in this is continuity. Let us imagine total space as a body of water into which we may sink certain vessels, and thus be able to define individual volumes of the water without, however, destroying the idea of a continuous mass of water enveloping all. In an artistic representation Nature must be expressed as just such a spatial whole, if it is to contain that elementary impression which Nature makes upon us.

Total space.

Since we do not conceive Nature with the eye alone nor from a single point of view, but rather as something always changing, always in motion, to be taken in by all our senses at once, we live and move with a consciousness of space surrounding us even when there are in fact scarcely any spatial suggestions in that which our eyes chance to perceive. We do not ask how this consciousness comes about, on what sort of perceptions and impressions it is based. Nor do we demand of the perception

The consciousness of space.

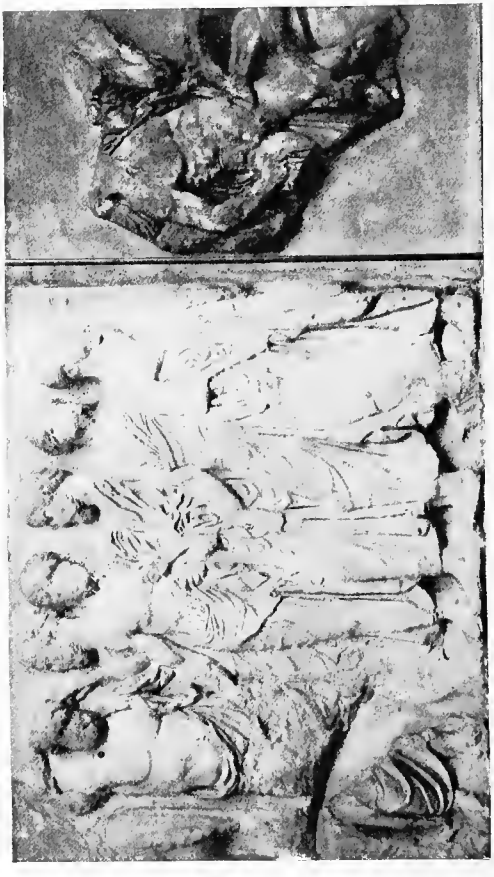


FIG. 12 (P. 87), ANCIENT SCULPTURE. MANY HIGH POINTS IN THE FRONT PLANE.

that it shall demonstrate to us its spatial attributes, each time anew. And yet this consciousness of the existence of space is present even when we close our eyes.

The idea of space in art.

Pictorial representation, however, has for its purpose the awakening of this idea of space, and that exclusively by the factors which the artist presents. Considering the limited area of the picture, the few and circumscribed means of visual expression, effective only in a very one-sided way, it follows that the artist must possess a very clear conception of those factors in the appearance which have a capacity for arousing in the observer infallibly and forcibly this most elementary effect of Nature; viz., a feeling of space. The more emphatically the artist demonstrates in his picture the volume of space, and the more positive the spatial suggestions contained in its perception, the more living and vivid is the illusion which the picture affords.

The arrangement of objects to suggest space.

If we set ourselves the problem of representing the general voluminosity of Nature as a visual impression, it will be best to imagine it as a volume seen from within and filled with both solid bodies and volumes of air having definite shapes of their own. Now, since the volume of a single object is suggested by the outlines of its form, so a certain volume of air may be indicated by several objects put together, for the boundaries of the objects also limit the volumes of air which lie between them. The problem is: so to arrange these objects that our kinesthetic ideas aroused

by them shall not remain separate, but co-operate and lead from one to another, on and on in all directions. This arrangement means that we construct and offer to our kinesthetic ideas a kind of frame work built up of different objects which are calculated to arouse our most fundamental ideas of movement. The single object becomes an architectonic element and takes its position in accordance with its capacity for awakening and directing our kinesthetic ideas. We must remember that this frame work is to be constructed with reference to a visual perception; that is to say, the arrangement of objects has to be made with respect to one point of view only. And so, what has been explained in the foregoing chapter concerning the relation of actual form and visual perception of the single object is again pertinent for the arrangement of different objects with regard to the spatial extension of the whole. The whole, therefore, becomes as much a compact unitary structure in space as any of its single parts.

Example.

To give the simplest example, think of a plane. It is evident that a plane is more clearly perceived when something is placed upon it, for instance, a tree—an upright. With something standing upon it, the horizontal portion of the surface expresses itself at once: one might almost say it becomes spatially active. The tree is affected in the same way. The upright tendency of its form is enhanced by the horizontal surface from which it springs. If the tree throws a shadow on the earth's surface, then the spatial relations of both are again emphasized, spatial ideas again stimulated. A few streaks of cloud on the horizon

draw our gaze, and we proceed from the vertical front plane into the background, thereby experiencing effectively by the simplest of means all the dimensions of space at once. We can now understand how the position and significance of single objects work for

FIG. 13 (P. 87), ANCIENT SCULPTURE. MANY HIGH POINTS IN THE FRONT PLANE.

the representation of total space. We see that when the single objects are properly used the spatial effectiveness of the whole is greatly strengthened. This proper use, on the other hand, helps them again in

their separate effectiveness, because in the picture at large they have a definite spatial function, a particular spatial part to play.

In this double role of spatial effectiveness, for the whole and for the part, we have the result of an artistic welding of parts into a whole. Thus we can understand the possibility of a coherence and unity in a picture quite distinct from the coherence and unity of Nature,—organic or functional. This coherence is the unique and specific possession of Art and is therefore rarely understood by the layman.

Artistic coherence in general.

Consider an imaginary landscape. Here the natural organic coherence is very loose as compared with that of a human body. The trees may stand here or there; the stream may follow this or that course; the hills may stretch thus or so;—it all depends on the artist's choice. And yet, in a good landscape we are conscious of a certain visual coherence between its parts, making it appear as though it could not be otherwise than it is. All the details of the picture are mutually conditioned as stimuli so as to produce in our minds a unified whole. Although the layman, with his interest in the subject, seeks out and pays most attention to the **t h i n g s** which are represented in the picture, he nevertheless succumbs unconsciously to the effect which makes the whole spatially alive and unified. This internal consistency of a work of art he feels without being able to explain it. Interest and imagination are stimulated and the

Artistic coherence:—illustrated in a landscape and in a figure piece.

attention held by the apparent reality of the impression. In landscapes, then, as we have seen, the spectator's interest in the subject being more or less limited, he surrenders himself more easily to the pure artistic effect. In pictures which represent figures, however, his interest in the figures as such, as individuals, dominates him, and he may easily lose himself in these details. Yet if he but stops to think that here as in the landscape everything is arranged according to the subjective laws of space perception, that the figures have to contribute their share to the perception of space, then he may understand the coherence which lends an artistic necessity to the structure of the picture; then he may realize that the figures have a much more general problem to solve than the mere telling of a story.

Summary.

Let us summarize briefly. It has been pointed out that a work of art must consist of a complex of visual elements, which, in order to produce a vivid idea of real spatial nature, must singly as well as in their mutual relations stimulate spatial ideas in us. In this mutual dependency of the different pictorial details and in their common stimulation of a total space idea is to be found the artistic unity of perception. And this is something quite apart from the biological or functional unity of Nature.

Visual values of space.

We are now prepared for the definition of a term to be used henceforth, the term **visual values of space.** By visual values of space we mean those values of an object which issue only in purely spatial perceptions tending toward the general conception of a segment of space. By purely spatial

FIG. 14 (P.87), ANCIENT SCULPTURE. MANY HIGH POINTS IN THE FRONT PLANE.

perceptions we mean perceptions, independent of the organization or functioning of the object involved. Let us take a form which is given visual expression by contrasts of light and shade. Through their particular relations and respective positions, these different degrees of brightness and darkness affect the spectator as if they were actually modeling the object. As a result of our earliest visual experiences they represent to us in such cases a spatial value. Since the spatial effect of Nature is a product of different factors—such as the actual form of the object, its proper coloring, the illumination with respect to direction and quality, the observer's point of view—a concerted effect is produced existing only for the eye, by factors which otherwise are not necessarily connected. This concerted effect, or visual unity, shows the separate conditions working simultaneously, and thus enables us to grasp the spatial relations of a simultaneous exposition. Therefore, the specifically artistic force and talent of the painter rest on his ability to discover the visual values of space in Nature, and the unity of his image and its power to create in the mind an idea of space, depend upon these.

Spatial effects in nature and art.

Considering how totally different a thing a picture is from the natural object which it represents, the force of the illusion which it produces remains a riddle unless we understand that the picture depends for its spatial effect on no other subjective conditions than does Nature. Neither produces spatial ideas directly, but only indirectly, and that through the medium of the same class of mental processes. Since Nature and the picture both

stimulate our sense organ in the same manner, we arrive, in fact, at the same resultant idea. The parallel between Nature and Art is not to be sought in the equality of their actual appearances, but rather in that both have the same capacity for producing spatial effects. The value of a picture does not depend on the success of a deception, as does the popular value of a panorama, but on the intensity of the unitary spatial suggestiveness concentrated in it.

The panorama.

The panorama, which is made up of both mere painting of flat surfaces and real objects distributed over the foreground, attempts to convey the observer into reality. This effect it produces partly by means of the varying distances of these real objects, thus requiring him to use varying accommodations of the eye as he does when really viewing Nature. But the observer is deceived concerning the real distances which make necessary the varying accommodations. Through an artificial perspective these distances are given a false spatial value which is greatly exaggerated toward the background. The brutality of such means lies in the fact that a sensitive observer discovers the lack of harmony between his muscular sensations of accommodation and convergence and his spatial judgments which are based on the purely visual part of his perception. According to his accommodation he is seeing a yard's distance between certain objects; according to his visual impression he is seeing a mile. This contradiction brings forth an unpleasant feeling, a sort of dizziness, instead of the satisfaction which attends a unitary spatial impression.

The better the panorama, i. e., the greater the illusion, the more painful becomes the contradiction among the space-determining factors, because we are less and less able to analyze correctly this mixture of factors. The poorer the panorama, the better

The crudity of its means.

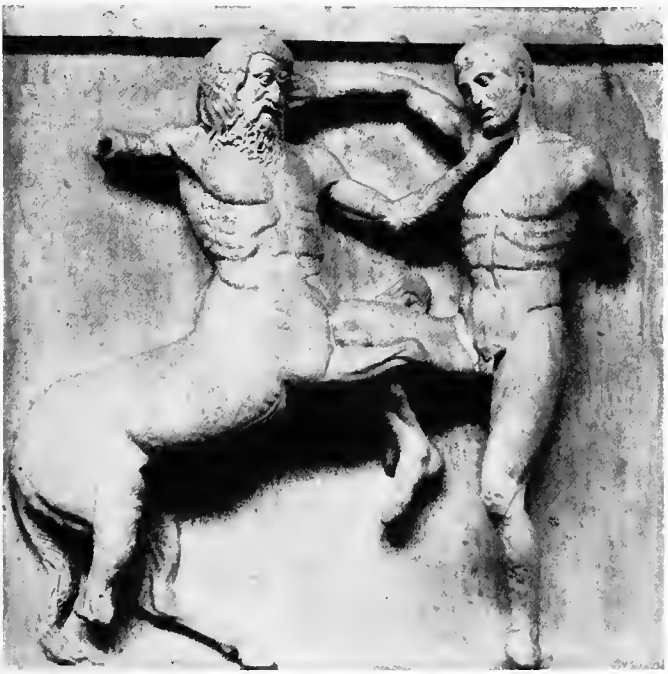


FIG. 15 (P.90), ANCIENT SCULPTURE. ILLUSTRATES THE EFFECT OF THE SHADOWS OF HIGH RELIEF.

we feel because the illusion ceases. The sense of reality which the panorama is intended to call forth presupposes in the spectator a coarseness and vul-

garity of observation—a lack of delicate discrimination respecting the kinesthetic sensations of the eye. The old-fashioned panorama, a mere continuous picture show, is an innocent amusement for children with no intention to deceive. The artificial and refined article of the present day, however, encourages lack of culture in perception, just as wax figures do, by means of perverse sensations and a false feeling of reality.

The superiority of art over nature.

It is in the accumulation and concentration of the effective factors in a picture that Art rises above the dissociated spatial effects of Nature. The artist watches Nature in her eternal change with this end in view. By eliminating all the weak and ineffective aspects he comes at length into an advantageous position toward Nature and her effects. And by this process of elimination he is enabled to infuse into his image the force which makes it valuable in comparison with Nature.

This means something quite different from a more or less skillful imitation on canvas of the visual perception of Nature as such. The appearance of Nature is not important to the painter because of her reality but because he finds in her the expression of his spatial intent, when he conceives her as providing space with furniture. It is only in the representation of the object as surrounded by the general space or volume of air, and not merely in the representation of its isolated actual form, that the problem of artistic appearance in its full meaning is solved. Whether several objects be perceived, or only one; whether the means of construction draw upon the manifoldness of Nature's appearance, or are confined to the form of one

object, as in the sketch of a figure; the problem remains the same. The difference lies only in this, that in the first case the means are more manifold and arbitrary, in the second they are bound to the organic nature of one object.

IV

IDEAS OF PLANES AND DEPTH

At a certain distance our eyes begin to see parallel, the two retinal images becoming identical. This distance image (Fernbild) is the **visual projection.** Attending now to the visual projection, and comparing the relative clearness of different parts of this image, we see that that which lies in the center of the field of vision is most clearly perceived, while towards the periphery the impression fades gradually away. In like manner anything not in the distance plane but lying close before it—in front of the stage, so to speak—is, of course, perceived along with it, but remains rather vague. That is to say, the space of which we are clearly conscious when we attend to the distance plane lies **behind** it. It commences with the plane. Space is conceived of as a penetration into the distance.

The idea of depth in the visual projection.

Now when we think of objects within this imagined space, they seem to offer, as it were, a certain resistance to this penetration. As we carry out such an imaginary movement, these objects may be pictorially indicated by plane areas, variously disposed, not receding, but holding fixed positions. By aid of the idea of a general movement into space which the total impression suggests, these areas, or pictures of single objects, attain the impression of being volumes. In this way, from any

The demarkation of objects.

while the total appearance will, at some point in the given point of view, all relations of solids and differences of solid form are read off from front to back,

FIG. 16 (P.91), ATTRIBUTED TO MICHELANGELO. PECULIAR EFFECT OF THE PROTRUDING HEADS.

picture, sooner or later, according to the positions of the objects represented, offer resistance to this even

penetration and thus define the several volumes represented.

The third dimension, as movement into depth, stands in contrast to the first and second dimensions, as visual planes. Yet by means of this idea of a general movement into depth the single impressions are combined so that we grasp the whole as a spatial unity. An adequate stimulus for this idea must be present in the picture. All the complex and intricate movements which go to make up our ideas of the several forms presented must be so arranged in the visual projection that their totality may be comprehended in the unitary act of one imaginary movement into space. To give a vivid spatial impression it is essential that this act be stimulated. There must be a potent force drawing our ideas into the distance, for the secret of a picture's unity of effect rests on the unity and force of that factor which draws us into its depth.

The general movement into depth.

The means for producing this attraction consist in the arrangement of the picture's spatial values. The objects represented serve this end in the following manner. The elements of sensation which compose these spatial values are lines, light and shade, and colors. Yet it is to be noted that these constitute a spatial value and act on our form conceptions only when regarded by us as representing an object. A line foreshortened in perspective would express no depth, a combination of lines would never indicate objects as lying one behind the other, if we did not think these lines as outlines

The nature of spatial values.

of certain objects. Light and dark become modeling forces as illumination and shade only through their relative positions from which we recognize the form of the object. Contrasts of light and shade indicate to us either nearness or farness in accordance with certain known characteristics of the objects in question. In the same way coloring has a spatial significance only when we have with it the idea of a definite object. In a carpet, where such an idea is, of course, lacking, the colors are effective only as colors. Unless the idea of a body in space is awakened in us, none of these factors mentioned expresses either nearness or farness.

The formative power of an idea.

The awakening of an idea of an object unifies a part of the visual projection and separates it thus from the rest. This explains why a number of mere spots and flecks, when they happen to be associated with our idea of an object, begin to take form and suggest to us an image of the object. Such an image possesses a high degree of unity just because this idea of the object is evolved out of these flecks, instead of our having to invent flecks to make up the pictorial idea. A purely chance effect of spots and flecks such as this may easily be the starting point of the artist's pictorial imagination. Leonardo da Vinci makes note of this fact in his "Trattato della Pittura."

Considering, now, a picture as a group of parts which illustrate objects in different distances, it is evident that these distances and the entire depth of the picture will be more clearly expressed, and more easily conceived when the objects are placed in few planes, and when the distances between these planes are relatively great. Each plane must be simplified as much as possible, so that our feeling for the third dimension may be stimulated through striking contrasts afforded by these planes.

The evolution of a "total space."

Looking at a figure isolated from its surroundings, we perceive certain differences of depth made apparent by its modeling, which, however, are not noticeable when we consider the figure in connection with its background. This is simply because the contrast of figure and background speaks more strongly and primarily than do the less striking contrasts wholly within the figure. The pictorial impression of the figure gains in unity in the same degree as its contrast with its environment obtains prominence. Instead of noting the detail-modeling which the figure exhibits when viewed by itself, we now perceive its form through its relation to the surroundings. By this means a figure not only is given individual form, but also constitutes with the background a general spatial value. As the figure enters into a definite relation with the background, the background is pushed away, so to speak, and a general depth movement aroused.

The more directly the means for producing this general movement from plane to plane appeal to the eye, i. e., the more readily they are perceived, the better adapted are they to the artistic end. To attract

the spectator's attention to the details themselves, e. g., by the technical skill exhibited in rendering their texture, is to distract his attention from the unitary perception.

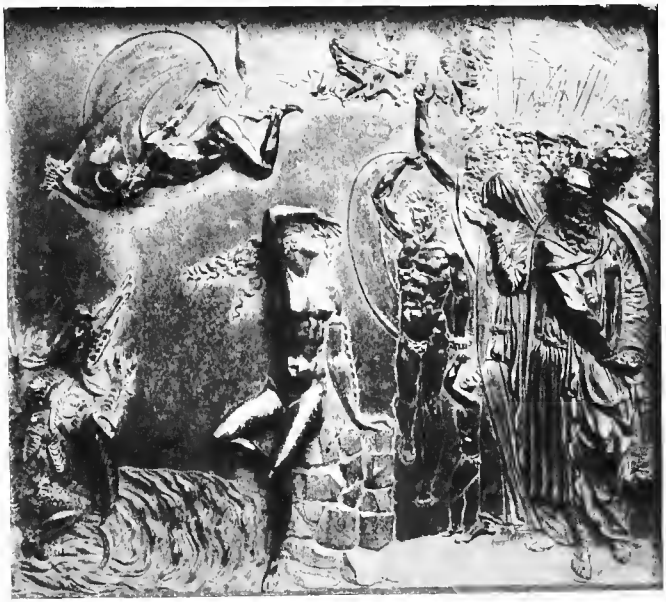


FIG. 17 (P.91), CELLINI. ILLUSTRATES THE EFFECT OF PROTRUSIONS NOT UNIFIED IN A PLANE.

The transformation of the actual form into a visual form.

As we have seen, objects in Nature when viewed singly at a distance appear flat as compared with the more bold and forceful modeling of objects near at hand, i. e., stereoscopically seen. With increasing distance the single objects seem to flatten out more and more; yet in the total impression they still maintain the effect of a three-dimensional existence be-

cause of the force of that general sense of depth which causes us to see everything as three-dimensional in nature. On considering the relation which exists between the actual form of a body and its appearance as a part of the visual projection, we may note that quite considerable distances between points of different depth are in the plane impression reduced to zero; while others retain their effectiveness or may even become more emphatic. For instance, the human chest with its gradually curved form appears flat when contrasted with the abruptly rounding shoulder muscles. Thus actual form becomes a visual form which, as such, is independent of actual dimensions. The single factors of the erstwhile actual form, group themselves into visual values. To the possession of such visual values of space is due our **pictorial** idea of a real Form.

The selection of a point of view.

While the visual projection represents with absolute clearness the relative sizes of things as they exist side by side in one plane it can give their relative distances behind one another only in a general way. When we wish to gain a more exact and comprehensive idea of spatial magnitude in this respect, that is, of distance in Nature, we change our point of view in order to obtain the depth measurement as a plane impression, in profile. We can never directly see the precise distance. We only infer it from our experiences of viewing things from various points. A clear and definite idea of an object rests primarily on its two-dimensional arrangement. Therefore in representing an object it is of great importance what aspect of it we select, and if it chances

to be a living being, in what position or act of movement we may seize on it. Nature affords many situations and views which, though clear and expressive when observed near by, become quite meaningless at a more distant point. To this class belong such situations as demand much foreshortening in their two-dimensional representations, where our ideas of depth must perform the main work in calling forth a complete notion of the object from its picture. Now if too much special attention to the various stimuli is demanded in order that this idea of depth be aroused, or should the stimuli be imperceptible in the distance, the picture is artistically defective.

Subjectively, foreshortening always means a retrogressive movement. It may however have the effect of arousing an idea of forward movement when, for instance, the actual movement in the body represented chances to be toward the observer. An example would be that of a figure which bows towards one. The foreshortening can here be read off, as it were, both from front to back and from back to front. If we imagine the act of bowing, we naturally feel a tendency to read off in the direction of the forward movement. Considered, however, as a fixed visual impression of something objective to us, we should read the foreshortening most naturally from front to back. This, needless to say, is the more artistic method of conception. From what has gone before, it is clear that any forward tendency must work against and may even eliminate the general tendency of movement toward the depth in the picture. And so this inartistic effect of the figure must be coun-

The problem of forward movements.

teracted whenever it appears. In spite of its forward tendency the observer must be compelled through artistic means to read off the foreshortening from front to back. In obtaining a unitary impression of depth nothing can be permitted to thrust itself toward us out of the picture. On the contrary, the dominant idea is that we should move into the picture. And this can be accomplished only when there is something behind the foreshortened lines drawing our gaze and forcibly inciting ideas of depth—that is, some sort of a 'distance.' The foreshortened figure, if it continues forcibly backward, becomes included in the general sense of movement into depth which pervades the whole. At the same time this strong feeling of depth which the background thus stimulates aids the spatial effectiveness of the foreshortened object and lessens the demands put upon this object to clarify itself.

Factors necessary for distinctness.

A further demand on the artist in choosing the position his object shall occupy arises from the great variation in clearness which a figure undergoes when viewed from different positions. It is important to note that whatever remains distinct of an object when seen from a distance is the essential thing in affording one a clear and comprehensible idea of it. For instance, in the representation of a body, human or animal; things which are characteristic of the body, such as the joints, must be kept in evidence.

FIG. 18 (P.95), ANCIENT SCULPTURE. RECTANGULAR FORM OF THE TOTAL SPACE.

Until now we have spoken of single objects as two-dimensional impressions or plane segments. We must next inquire how these single plane segments are to be combined into groups of two-dimensional impressions and made to work together in one effective system towards the idea of a general movement into depth. This is accomplished either by arranging the objects in one plane, or by combining their planes by means of superposition. Superposition connects the appearances of objects in front with others which are behind. Its great value lies in this, that figures in different planes may thus be juxtaposed so as to present one uniform two-dimensional effect. By means of this device the different planes seem to stretch hands to one another, so to speak, yet without ever being thought of as in actual contact. A portion of that which lies behind in the picture must be covered. The question then arises, does the object behind remain sufficiently intelligible, and where and how shall it be cut off? We may, of course, limit superposition to a minimum and avoid almost entirely the covering of things behind by others in front. Pictured objects may thus be held apart in distance, yet be united as to a two-dimensional effect. The development of this may be traced in the symmetrical figure-pictures of the early Renaissance. At first these figures were arranged entirely in one plane. But gradually the arrangement became looser as the artists learned the possibility of producing the effect of a unitary plane indirectly and in spite of the disposal of the objects through several planes of distance.

The combination of single planes into a totality.

The illumination furnishes a further means of unifying planes of different distances. Certain planes may thus be held together as uniform masses of light which act in opposition to the darker areas.

Illumination as a unifying factor.

The direction through the picture taken by our idea of general movement into depth will depend on the arrangement of the picture as a whole. And this has its consequences for the artistic effect. For instance, if something near be placed in the middle of the picture, and on the sides to right and left things which are more distant, the result will be that the retrogressive movement into depth begins with the central part as being close at hand and proceeds by stretching backwards to either side. The 'Sacred and Profane Love' of Titian may serve as an example of this method of arrangement. Such a representation agrees with our normal mode of looking at Nature as it spreads out with increasing distance.

The direction of movement in a picture. Distance at the periphery.

Think now of a reversed arrangement, to the right and left the near objects, distance in the middle of the picture. Our ideas of movement into depth, our retrogressive spatial judgments, begin here with the full extension of the canvas only to traverse narrower and narrower areas as they approach the further distance. From the very start such an arrangement opposes our true and normal relation to Nature. Our feeling for space is curtailed rather than incited to infinite stretches. In exceptional cases such an arrangement may be justified

Distance in the center.

by the particular object represented in the picture, as when we see the interior of a cave to right and left, but look through its opening in the center of the picture out upon a landscape which stretches into the distance. But such exceptions only prove the rule, for they can never be particularly illustrative of Nature's extent.

The diagonal arrangement.

The unsatisfactory effect of this last method of arrangement may, of course, be avoided by a modification which emphasizes, for instance, the near on the right edge of the picture and the distant on the left. For then our spatial judgment is led diagonally through the picture, yet does not find a circumscribed field as it approaches the distance.

The dependence of effect on arrangement.

With respect to the particular guidance of our spatial judgment in this or that direction there are, of course, many possible variations in the arrangement of a picture. Many paths lead into the world of space. To understand this fully a psychology of artistic effectiveness is requisite; a developed sensibility to the influence which these differences exert on our general feeling for space. For there can be no doubt that our general sensations of space are very closely connected with our ideas of movement. Remembering what we have already discovered, that every effect depends on the arrangement and counterposing of single factors and that values and measures can be obtained only in this way, we may understand the influence which every alteration in the welding together of the visual

FIG. 19 (P.95), ANCIENT SCULPTURE. ILLUSTRATES CLEARNESS OF TOTAL SPACE.

elements must exert on the harmony of our ideas. It is out of such experience that the fund of artistic tradition is made up. In times when art flourishes such a fund accumulates and is thereupon handed down from one generation to another in the form of principles and a certain knowledge of artistic effectiveness.

We have considered the effect of two-dimensional space in relation to the impression of depth, but not yet the conception and arrangement of the two-dimensional impression as such. Here come into consideration the two elementary directions: the vertical and the horizontal. As a result of our vertical position to the earth's surface and the horizontal arrangement of our two eyes, these two directions are naturally more fundamental than any others. All the rest we learn to comprehend, to judge and to measure in terms of the vertical and the horizontal. When we see a picture in Nature which contains these two fundamental directions, as, for instance, a vertical tree and a horizontal sheet of water, we are at once possessed of a satisfying sense of clear spatial relations. In Nature the horizontal direction generally dominates. On the other hand, practically all that stands and grows upon the earth's surface has an upward, vertical tendency. These fundamental directions in Nature correspond to those inherent in our organism and to our natural feeling. Everything, therefore, which exists in the same horizontal or the same vertical position readily gives a unitary impression to the eye. Things which appear thus in a work of art lend stability to the total

The two fundamental directions.

structure. Whenever the arrangement of factors is such in the appearance as to build up a kind of frame work of vertical and horizontal directions among the various shapes of the objects depicted, it becomes, like the skeleton to an organism, everywhere felt yet nowhere seen.

Emphasis of these directions lacking.

But suppose, now, the artist finds himself confronted with a certain situation in Nature which contains nothing to bring out the vertical and horizontal. It may chance that everything tends one way or another, without emphasizing these two fundamental directions. Such a situation may be quite true to Nature, yet lacking in general truth, since our common feeling for the proper directions is not adequately aroused. No point of departure for a pure spatial feeling is given. In such a case the artist is obliged by some means to make the horizontal and the vertical felt in order to draw this particular situation under the fundamental conditions of universal Nature. For, after all, such special situations are always arbitrarily cut out from Nature's totality. Whenever an artist depicts a particular situation from this generalized point of view, he is at once making it an expression for our universal relation to Nature. It therefore becomes effective far beyond the narrow frame of its special meaning.

The natural law.

Thus we see how important and how effective for the attainment of repose and harmony in Art, is adherence to these simple fundamental conditions. But it is not enough that the artist should know this law. The law must live in him as a part of his

mental organization, accompanying and conditioning every idea in his perception and representation. On such a law, evolved out of natural requirements, depends all artistic discipline, all culture of the artistic imagination.

So far we have been discussing drawing only. And indeed, this is the essential means for producing a unity of spatial effect—the architecture of the picture, we may say.

Color contrasts as formative factors.

But we must also mention color contrasts as forces which bring together and separate things in the picture, forces which produce forward and backward tendencies. It is self-evident that color is specially serviceable in our perception of space. A unity of color in a picture can be spoken of only in so far as the color takes part in the great work of forming a three-dimensional unity. The important thing is not that the colors should prove attractive of themselves, as they do in a carpet, but that their values as spatial stimuli be positive. A special knowledge of color relationships and values in this respect is requisite, and goes to make up a particular stock of the painter's experience. But it is hardly my business here to do more than point out the fact.

A living proof of the existence of spatial Nature lies in the splendor and magnificence of her color effects. They are, indeed, most forcible stimuli for spatial ideas. The hues of a picture have real meaning only when they exist in accordance with all the other space-evolving factors, and are thus turned to account as a means toward the general end.

The true function of color.

True splendor of color can only be the result of a general artistic formation of the picture. It is not a thing to be directly striven after and acquired through this

FIG. 20 (P.95), ANCIENT SCULPTURE. ILLUSTRATES CLEARNESS OF TOTAL SPACE.

or that technical means. In such cases the effect is simply decorative and no true expression for our total idea of Nature.

Here, too, must be remembered the coloring of architecture and sculpture. For in these, just as in painting, color contrasts are primarily significant to bring out the form. Since the effects of light and shade on a building change with the position of the sun, the proportions of form also change in their effects. Contours of form disappear in shadows, the eaves of a building seem broader as the shadows lengthen. In short, light and shade become more effective than the actual form. These changes may be counteracted by the use of colors. Since color contrast is stronger than light and shade contrast, it follows that form proportions may be made apparent by the aid of colors, quite independent of the illumination and, indeed, in spite of it. It is only necessary that colors be so applied that a color contrast is effective whenever the light and shade effect is confusing. But it must be remembered that it is the contrast effect, not the use of certain colors, which is desired.

Color in architecture.

The same thing holds true with respect to figures which are distinct from the architecture as a whole, for instance, in pediments. The color tone which these figures may have is of itself unimportant. It need only be effective as a contrast to the rest of the building, but not as a proper color for the figures themselves. One is not to get the impression that it must be a brown or a yellow race of people which is represented, when the figures happen to be so colored. The color has quite another significance. Proportions of form are ex-

Color and architectural figures.

pressed by these colors without regard for the special meaning which the colors may have in Nature.

Color and isolated sculpture.

With respect to an isolated piece of sculpture the conditions change in so far as the object is no longer an essential part in a total color effect, playing its particular role of color in the whole appearance. The piece stands, rather, opposed to Nature as something separate and isolated. In so far as Nature always presents to us a colored environment, the statue, to be harmoniously effective, should be no exception to this, but should exist also as a colored impression. Nature is not artificially colored; neither should the statue be. Colors are not here the means of representation. The first demand is that the figure should assert itself as a totality in contrast with its surroundings. And so its color should be as uniform as possible. The right thing in general is to give bronze a patina and to give stone sculpture, when needed, a tint such as Nature would give it. The painting of sculpture from the view point of objective fidelity is a monstrous crudity.

V

THE CONCEPTION OF RELIEF

It was pointed out in the last chapter how the artist with his problem of making a unitary picture out of his complicated ideas of the three-dimensional is compelled to separate clearly the two-dimensional appearance of the object from the general subjective idea of depth. Thus he arrives at a simple idea of volume as a plane continuing into the distance. To make this manner of presentation quite clear, think of two panes of glass standing parallel, and between them a figure whose position is such that its outer points touch them. The figure then occupies a space of uniform depth measurement and its members are all arranged within this depth. When the figure, now, is seen from the front through the glass, it becomes unified into a unitary pictorial surface, and, furthermore, the perception of its volume, of itself quite a complicated perception, is now made uncommonly easy through the conception of so simple a volume as the total space here presented. The figure lives, we may say, in one layer of uniform depth. Each form tends to make of itself a flat picture within the visible two dimensions of this layer, and to be understood as such a flat picture. Again those outermost points which touch the panes still determine common planes even when one thinks the glass removed.

The conception of volume.

FIG. 21 (P. 112), ANCIENT MONUMENT. "FIGURES ENTERING A TOMB" REPRESENTED IN RELIEF FORM.

By this sort of arrangement the object resolves itself into a layer of a certain uniform thickness. The total volume of a picture will then consist, according to the object represented, of a greater or lesser number of such imaginary layers arranged one behind the other, yet altogether uniting into one appearance having one uniform depth measurement. So the artist divides and groups his ideas of space and form, which consisted originally in a complex of innumerable kinesthetic ideas, until there results a simple visual impression stimulating a strong idea of depth, which the resting eye is able to take in, without kinesthetic sensations, or movements producing such.

Layers of uniform thickness.

This manner of presentation is a necessary product of the relation of our three-dimensional ideas to the simple visual impression. It is the only artistic conception of things three-dimensional; and this whether it be the representation of a single form or of a more complicated totality of forms; whether it be the work of a sculptor or of a painter. The aim—the presentation of a general idea of space by means of a visual perception—is the same for painter and sculptor, and the work of each is directed by the same subjective requirements, however different may be their means of representation.

The artistic conception of the three-dimensional.

This common mode of artistic imagination as above developed is no other than the conception of relief so prominent in Greek art. This conception of relief defines the relation of two-dimensional impressions to three-dimensional. It gives us a specific way of viewing Nature; it is a mold in which the artist casts the form of Nature. In all ages this mode of perception has resulted from the artist's insight into the unchangeable laws of art. Its absence means a deficiency in one's artistic relation to Nature, an incapacity for understanding this relation and developing it consistently. The thousandfold judgments and movements of our observation find in this mode of presentation their stability and clearness. It is an essential to all artistic form, be it in a landscape or in the portrayal of a head. In this way the visual content is universally arranged, bound together and put in repose. Through all figurative art this idea is the same, the one guiding thought. It acts always as a general condition and requirement to which all else is subordinate, in which everything finds a place and a unity. Just as in the two-dimensional all directions are measured with respect to the vertical and the horizontal and thus become easily comprehensible, so the single ideas of depth obtain definite values only when they appear in relaton to a general unitary idea of depth. The harmonious effect of a picture depends on the artist's ability to represent every single value as a relative value in this general conception of relief. It is only thus that his work attains a uniform standard of measurement. The more clearly this is felt, the more unified and satisfactory is the impres-

The conception of relief.

sion. This unity is, indeed, the Problem of Form in Art, and the value of a work of art is determined by the degree of such unity it attains. It is this unity which gives consecration to the representation of Nature. That mysterious satisfaction which we obtain from a work of art rests alone on the consistent application of this conception of relief to our three-dimensional impressions.

A possible objection.

In connection with our theory that artistic representation is concerned with a distant view, there may arise an objection, which ought now to be answered. Since the visual projection is always smaller than life size, the distant point of view may seem to some to exclude a representation in actual size with its distinctness and clearness of detail.

The "size" of the visual projection.

The meaning and value of the visual projection rests upon the way in which it models and unifies Nature as a whole. Its unifying power is its only property that counts. In the first place, the distance at which an object appears clear and precise depends entirely upon the acuteness of the eye. The distance necessary for the visual projection has no direct relation to the precision or vagueness of the picture; although it does affect the hardness or softness of the appearance. Neither, in the second place, is the scale of the representation dependent on the idea of distance; the fact being that perspective diminution in Nature is scarcely perceived by us at all. A man at some distance appears no smaller than when near by. We re-

gard things in Nature as life-sized even if they are at great distances. Indeed, we never relinquish this idea. Perspective in Nature is merely a means for inciting spatial ideas. Objects are always imagined

FIG. 22 (P. 113), CANOVA. "FIGURES ENTERING A TOMB" REPRESENTED REALISTICALLY.

in their actual sizes. The attention of the ordinary man must be especially called to the fact that the image of an object decreases in size as its distance in-

creases. This proves how very surely ideas govern visual impressions in consciousness. Primitive pictures lacking perspective find their natural explanation in this fact. A more highly developed consciousness is requisite in order to observe the visual appearance as a mere sense impression, separating it from its involuntary effect on ideas of form. Furthermore our impression of life size is to a large extent independent of the actual size of the picture. We seem, as it were, to grow larger or smaller to fit the picture, or we may imagine the picture thrust back into the distance, and thus, by explaining to ourselves its smaller appearance, restore it to life size. Whether it be the one case or the other depends on the manner of representation. If a representation on a small scale be given in broad outlines, the effect will be as if the object were seen from a distance, and accordingly it appears life-sized. But if the picture be very carefully executed in detail, it may have the effect of being life-sized in miniature; then we make ourselves small to take it in. It is the force of the stimulus, not the scale of representation, which determines the mental attitude. Accordingly the conception of relief is quite independent of the size of the representation, and good life-sized portraits give an impression of distance quite as well as do smaller ones.

The evolution of relief.

Now that we have recognized in the conception of relief our general artistic relation to Nature, it is necessary to consider plastic relief more closely as a direct expression for these artistic relations. The conception of relief springs from the impression of a Visual Projection. Nature

seen from near by is not in relief. The elements of the conception of relief are, as we have seen, the unitary effect of the two-dimensional in a plane, and of the three-dimensional in a unified judgment of depth. Through these effects the representation enables the eye to develop a spatially clear idea of Nature,—a cognizable picture of the object in one plane, and a unified judgment of depth for arousing the perception of its volume. From this has developed the conception of relief in sculpture, varying all the way from a very low or flat, to a very high, round relief in which the depth measurement is the same as the real depth of the figure in Nature.

The necessity of a plane effect.

In all these stages from low relief to high—or better, from shallow to deep—the first thing of importance is that the effect of a plane be forcibly expressed. In other words, a sufficient number of the highest points of the relief should be in one plane for this plane to impress us as such. But let an isolated point protrude noticeably, and it will appear to be before the frontal plane of the volume of space which is being represented, and accordingly, be excluded from our retrogressive judgment of depth. The point seems to come towards us, separated from the rest of the representation, and it is no longer read off from front to back. The effect, therefore, is thoroughly inartistic. This mistake one finds most prevalent in the art of today.

In order to produce a unitary judgment of depth, the effect of the whole must be that of one uniform depth measurement. This requires, therefore, a back plane running parallel to the front plane, or at least seeming to do so in the impression one gets. This back plane in a relief serves as a common background for the figures represented. It depends entirely on the forms in front whether the ground shall actually be deeper in one place or another. The result must be an impression of a unitary background for all these forms. The chief plane of the relief is **not** this back plane, but the front plane in which the high points of the figures appear. Otherwise the figures would seem to be arbitrarily stuck on before the visual projection.

The back plane and the front plane.

With respect to the depth measurement of details as compared with the total depth, one often meets with the false notion that when, for instance, the total depth of a relief chances to be one-third its natural measure, then the details should likewise measure each one-third its natural depth. That is to say, the relief would represent a figure the actual depth of which has been divided by three. But we have already found from our previous discussion that form relations which give the desired effects in the visual projection do not correspond exactly with the actual measurements of the object. Differences of depth may combine, producing the effect of a single plane, and this through contrast may cause others to show their difference more forcibly. Actual and visual

The unimportance of the actual depth measurement.

form are not the same, and the conception of relief is attached to the visual, not to the actual form. For it is with visual effects that we are concerned. Accordingly, the relief is independent of all actual depth measurements. Thus it is clear that the relief does not represent a proportional division of Nature's thick-

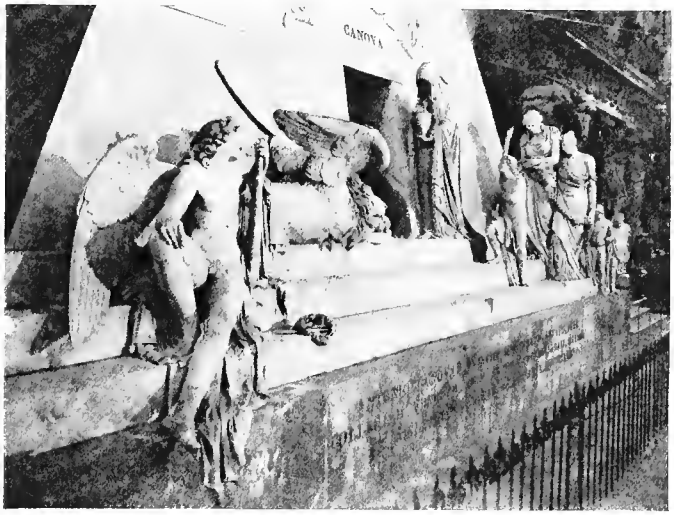


FIG. 23 (P. 113), CANOVA. "FIGURES ENTERING A TOMB" REPRESENTED REALISTICALLY.

ness, but a picture independent of all this, which gains through its visual value a meaning and a claim for existence. We can see how unimportant the actual depth measurement of a figure is from the fact that when a relief is freed of its background and set up at a distance, it is very difficult to know whether it is a relief or a figure in the round.

It may be thought that every low relief could be converted into a high relief, and conversely. This, however, is not true. A low relief which is so constructed that it may express itself in the uniform illumination of a relatively flat surface, would acquire many shadowed parts if its figures should be cut deeper and rounder. For instance, the second leg of a profile figure in low relief is visible because it receives the light as well as does the leg in front. But throw the second leg deeper, and the shadows produced may cause it to vanish entirely. Whether details of form shall stand in full light or not in order to express themselves properly, depends upon the conception and arrangement just as it does in painting. Nor can a high relief be converted into a low one. Its shadows are essential, and when they vanish its effectiveness is lost.

Conversion of low into high relief and vice versa.

We may say something here about relief representation in bronze. In all bronze representations the silhouette effect, definite outline, is necessary for clearness' sake. But in a relief this effect is notably lessened by the dark background, which seems, as it were, to encroach upon the clear outline of the figure. Therefore the internal contrasts must be strengthened. There must be greater heights and depths. The metallic sheen on the high parts induces the artist to conceive his work as a thing emerging out of the dark, an effect similar to that of Rembrandt's paintings. Since bronze representations are often used as decora-

Relief representation in bronze.

tions or panels rather than as individual works of art, it may happen that the figures used serve their ornamental purpose in seeming contradiction to the relief principle. As a suitable example I may mention the little bronze door attributed to Michelangelo, on which full-formed heads protrude from figures in very low relief. But the heads are made use of as metal knobs for the door, and, since they are regularly repeated, they come to form with one another a common, though a rather loosely conceived frontal plane to the relief. This freedom, however, which is here so well understood and justified, has led others to allow protrusions where no such ornamental requirements are to be met, and where, in default of repetition, there results no unification of the high points into a plane. In this way an artistic error is committed, as for instance in the reliefs on the pedestal of Benvenuto Cellini's "Perseus;" and this error has again and again found imitators.

The derivation of artistic principles from the material of construction.

The seeming and ofttimes actual contradiction between the principles which underlie bronze reliefs, and those underlying stone reliefs has led to the erroneous view that every material demands a different treatment in relief. Following this line of argument still further, some have concluded that the principles of artistic form are dictated simply by the properties of the material used, and have thus assumed the very opposite of what is true. Because the properties of the material may compel the artist to adapt himself to a different mode of treatment in order to meet artistic requirements whose origin is quite independent of the

material, these persons believe themselves justified in deriving the principles of art from the material. Sculpture, then, is nothing more to them than the result of applying various methods of carving to different materials. This confusion of the end with the means of art should be discredited once and for all.

The application of the relief conception to sculpture in the round.

If, now, we apply the conception of relief more particularly to the representation of a figure in the round, this conception requires that the figure represented shall, from various aspects, satisfy the demands of relief—indeed, express itself as relief. This again means that the various aspects of the figure shall each present an intelligible picture as a plane layer. Our concern is, that the figure in each of its aspects shall excite the idea of a layer of space, and at the same time describe a total space clearly possessing unity of plane. In this manner the whole material content is metamorphosed into a visible form, and thus, in contrast with its real solid form—a cast, as it were, of Nature—becomes a pure perceptual form. This process, once more, we can best understand with the aid of our two glass walls. Unified, from its principal points of view, in one common plane, the figure gives the same feeling of repose and visibility that we obtain in the case of a clear impression received at a distance. That which in Nature is unified to the view by means of distance, enters into the representation by means of the arrangement of the figure and appears equally unified, whatever the spectator's distance, so that, even from near by, the appearance is that of a plane picture. The same clearness which characterizes

FIG. 24 (P. 113), TOMB OF MICHELANGELO. ILLUSTRATES THE RELATION BETWEEN ARCHITECTURE AND SCULPTURE.

the form of the whole figure is necessarily to be found also in the structure of any of its parts.

If a figure in a representation must be arranged so as to appear unified in a plane layer, then the spectator must choose his point of view with reference to such a plane. The point of view is determined by the arrangement of the figure. If the figure offers more than one plane picture, there will, of course, be more than one position from which to view it. The number of satisfactory aspects a work may have depends on the artist's conception; it may be two, front and rear, as in statues of a relief-like character; it may be three, or four, etc. It is the energy with which the work emphasizes these certain points of view, not their number, which interests us here. But among all the possible aspects there will always be one that dominates. This one is representative of the total plastic nature of the object, and, like a picture or relief, expresses it all in a single two-dimensional impression. It stands for the virtual visual idea underlying the plastic representation which dominated the artist's mind when he created the work. All other aspects of a statue are subordinate to this one, are, indeed, mere physical consequences of its bodily existence. The problem in a plastic **ensemble** consists in arranging a solid figure so that it can afford us such a picture.

The various aspects of a figure.

All details of form must unite in a more comprehensive form. All separate judgments of depth must enter into a unitary, all-inclusive judgment of depth. So that ultimately the entire richness of a figure's form stands before us as a backward continuation of one simple plane. The better this unification into one plane succeeds, the more satisfactorily does the form speak in the appearance. If we are to obtain clear pictures of the statue from all points of view, a unifying plane must, as it were, run all round the figure, enclosing it completely.

The total form and the details of form

With figures which are worked out to express themselves clearly in the appearance, the total space in which they are conceived speaks with great clearness and force. The planes into which the natural solidity of the figure reduces, make up an imaginary space having a clear cut form—a rectangle of greater or lesser depth. Whenever this is not the case, the unitary pictorial effect of the figure is lost. A tendency is then felt to clarify what we cannot perceive from our present point of view, by a change of position. Thus we are driven all around the figure without ever being able to grasp it once in its entirety. Not a hairbreadth's advance has been made through representing the object in a work of art: it might as well have been left a piece of Nature. The purpose of sculpture is not to put the spectator in a hap-hazard and troubled state regarding the three dimensional or cubic aspect of things, leaving him to do the best

The total space and the picture effect.

he may in forming his visual ideas. The real aim is to give him instantly a perfectly clear visual idea and thus remove the disturbing problem of cubic form. So long as the chief effect of any plastic figure is its reality as a solid, it is imperfect as a work of art. It is only when the figure, though in reality a solid, gains its effect as a plane picture, that it attains artistic form, that is to say, perfection for our sense of vision.

Statuary in the open.

The clearness required of a representation necessitates a somewhat different treatment of the work according as it is to be placed in the open air or indoors. In the open, clearness is obtained by means of a characteristic outline, a silhouette. This is necessary whenever sculpture is to be effective at a distance, because the inner visual details gradually disappear as the figure recedes. A clear and expressive silhouette carries farther than any other characterization of an object. The Greeks made great use of silhouette in order that their sculpture might appear clear and effective at a distance. For bronze it is a general exigency, since the internal form, owing to the dark color, never speaks strongly enough.

Statuary in closed space.

Indoors the case is different. The point of view is nearer and allows the internal form to express itself. Since the field of vision, always vague and indistinct at the edges, becomes less comprehensive as the distance from the object decreases, its effective portions contract more and more, and lie nearer to the center. Consequently, whatever gives meaning to the object must find its place in the central

portion of the field of vision where it can be readily comprehended. Representation by means of a silhouette requires a point of view sufficiently removed to allow the whole work to be seen. Near at hand, when the figure encroaches on the entire field of vision, or even exceeds it, we can not depend on any intelligence that the outline may offer, but must, on the contrary, manage to do without it. In such cases, the outline which encloses the total mass is made as unobtrusive as possible, and the figure may become a unit in itself quite separate from the background. This method of arrangement, for sculpture intended to be placed indoors, was especially developed during the Renaissance. For an example one has only to think of Michelangelo's compact figures.

With bronze, where the internal form never speaks so clearly that the silhouette effect may be neglected, the artistic instinct prompts the sculptor to reduce the scale so that the entire silhouette falls within the field of distinct vision. Thus, for a nearby point of view, a bronze, which relies on its silhouette effect, must be made on a smaller scale than a marble figure.

The reduction of size in bronze representation.

Since the essence of the conception of relief is to be found in the transformation of the cubic into a simple visual impression, this conception must necessarily be prominent whenever anything solid is to be constructed artistically; i.e., not alone in sculpture, but also in architecture, furniture, etc. It is requisite in all these arts that we should

The conception of relief in architecture, furniture, etc.

FIG. 25 (P. 125), ANCIENT SCULPTURE. ILLUSTRATES THE EVOLUTION OF SCULPTURE FROM DRAWING.

have a definite idea of a frontal plane and that we should read off the details of form as depth values from front to back. Take for an example the Greek temple. Here is a unitary spatial mass. The columns are placed so close to one another that they form the first layer, as in any work of sculpture—the chief, though a perforated, plane to the whole body. What we perceive is not a spatial mass in front of which are found columns tending towards us. On the contrary, our general judgment of space proceeds backward from these columns, between them into the depth. The Romanesque style of architecture exhibits the conception of relief in a special way. Each opening is conceived as a fracture of a wall consisting of several successive layers, rendered visible in the profile of the opening. In all the many differing styles of architecture this problem remains the same: the problem of unifying forms into relief effects. Only in this manner can a structure attain artistic unity. So long as we can conceive a building merely as a composition of various forms of a certain style, it is comparable only to an object in Nature. Its artistic unity has yet to be obtained through conforming to the conception of relief.

I must confine myself here to this brief intimation, only drawing the one general conclusion in passing that architecture as art possesses the same formative principle as do sculpture and painting.

VI

FORM AS INTERPRETATION OF LIFE

In the previous chapters we have had occasion to consider 'appearance' with regard to its capacity for expressing our ideas of space in Nature.

The mental process of "seeing."

We started out from the human ability to grasp the spatial character of Nature from the optical image. This combination of the optical function and the mental act of understanding, we characterized simply as seeing, just as we say that a child can read only when the conception of the living word is called forth in his mind by the sight of the letters. The work of art represents that appearance of a thing or group which is recognized as of all possible appearances the one most readable. The spatial content of the work of art is arranged with this end in view.

Space and form are the first things that we decipher from the appearance of Nature, and I have therefore treated the ideas of space and form first and together because they are the most elementary and necessary factors. Ideas suggested by form, as expressive not of space, but of organization, function, or movement, take their place as factors in art only after the spatial ideas are established. First among such non-spatial ideas may be mentioned those concerning the material substance in its influ-

Form expressing a cause.

ence on form in Nature. Form becomes an expression of internal structure or of forms lying under the surface, as in the case of any organic body at rest or in action. We may also have the idea of a motive, a purposive action, or a process causing an alteration or movement of the form. Both are ideas of form as movement of the form. Both are ideas of form as the expression and result of conditions either permanent or transitory.

Temporal implications.

Whenever we think of the cause of a certain appearance and consider this appearance as the result of either mental, organic, or mechanical processes, we add at once a past and a future to the momentary presentation, i. e., we grasp it as continuous. Ideas of such a past and such a future are aroused in our minds, and included, as it were, in the appearance. This means, of course, only that certain associated ideas belonging to the factors presented by the appearance are immediately aroused.

Putting aside, as of minor importance, the influence of the material substance on form, we turn now to form as expression of a natural process.

Interpretation of movements.

Nature, as she moves, produces alterations in her appearance, upon the most comprehensible of which we seize as characteristics and indices of her process. The perception of these indices suggests to us the idea of the whole process, and in imagination we perform the process and thus comprehend this inner action as the cause of the external appearance.

The mimetic play of laughter and of weeping in

Mimetic activity.

others is comprehended by the child only through imitating it and then comparing it with his own muscular acts which accompany his pleasures and pains. Indeed, it is in this way that we all come to understand the mimetic activity of others and to translate their movements as we perceive them into the comprehensible expression of certain mental processes. We even go so far as to interpret a novel bodily expression by imitating it and thus comparing it with certain more or less similar expressions with which we are familiar, and which signify to us certain definite feelings. In this way a fund of indices to processes is accumulated, the value of each index being proportional to its clearness.

The expression of function as a vitalizing agent.

If we expand this conception to cover all bodily form, we find it applicable everywhere in Nature. Our ideas of function are everywhere vitalizing agents, and thus, for both spectator and artist determine the form of the representation. What we call, off-hand, the life of Nature is, in reality, the animation of Nature through our ideas. The expression of function is to be taken here in its widest sense; not merely for a direct momentary process or act but also for the state of repose. Such states of repose may require of the spectator more in the way of subjective interpretation than do states of motion.

Nature does not always present the vivid mimetic play which tends so strongly to arouse our sympathetic action. In such cases, as we have observed, our ideas of the action are gained from within, from the to-

FIG. 26 (P.125), ANCIENT SCULPTURE. ILLUSTRATES THE EVOLUTION OF SCULPTURE FROM DRAWINGS CARVED INTO A BLOCK.

tality of our past experience of bodily feeling. It is in this way that the actor gives expression to his role. In the same way the artist, wishing to command the minds of his spectators, is not bound down to Nature's actual appearances as presented to him. He rather develops for himself a language in accordance with his own subjective ability, and in this language he speaks through his representation, using types of expression, not reproducing exactly any special phenomenon.

The universality of the vitalizing force.

It is evident that this vitalizing force of our ideas is in no way restricted to living things, but extends over the whole of Nature. It is thus that we are able to bring ourselves into relation with everything and to saturate each object with our bodily feelings.

Signs of function in repose.

The signs of function which have become established in our ideas are effective even though the object be in repose. For instance, a long-fingered, sinewy hand, though quite at rest, reminds us so forcibly of the appearance of a hand stretching and grasping that of itself it seems to express this act, together with those bodily sensations which are usually connected with it. It carries, as it were, in its latent state, the impress of action. In a similar way a strongly developed jaw gives the impression of force and energy, since when we exert our will power strongly we are apt to shut our jaws tightly, so that the muscles become prominent. And, because in this case the muscles are conspicuous, we accept any jaw which of itself chances to appear

strong, as a symbol of the exertion of will. Accordingly we perceive in it an expression of strength. Again, since the muscles of the forehead contract during anger or effort, we take this effect for an expression of anger or effort, and whenever we find such prominent muscles, even though they be in repose, and merely the result of a peculiar skull formation, we recognize in them a determined character.

The development of stereotyped forms.

In this way certain more or less stereotyped forms, just because they remind us of form in motion, become expressions for mental processes, although the forms need not be thought of as moving. The artist thus develops certain types of form, which have definite meanings and arouse in the observer definite bodily and mental actions. By steadily attending to any particular function we gather, from observation, numerous expressions of it from which evolves a general type of bodily form expressing this particular functional character. And this holds as well with regard to our receptive relation to Nature as it does with regard to our productive activity in art. The body as a whole affects us as a unit having this typical significance when the same degree of tension or relaxation is expressed throughout its entirety. It makes no difference whether this type is to be found in Nature or is a mere creation of the artist. In either case it has the same reality to our imagination.

As we study the requirements of our mental organization for building ideas we note that what the form says need not always be true to Nature. It may be that the fellow with a strong jaw is at heart a coward, while the sinewy, long-fingered hand may be stiff and unused to grasping. Thus the actual relation of reality to type would each time require a separate interpretation; but the esthetic effectiveness of form based on these signs of function is not concerned with the actual relations of form and content as they may chance to exist. For instance, a voice which chances to be pathetic in tone moves me even though I am certain that its possessor is not sad.

The form language independent of objective truth.

It may be well to observe that such interpretation of forms varies not only with persons but with times. An attitude of scientific observation, of strict adherence to the actual relations which obtain, may stand to such an extent in the foreground of interest that the force of mere visual suggestions such as those mentioned gradually declines. The spontaneous activity of the mind, when opposed by scientific demands, by an interest in positive content and demonstrable facts, feels unjustified and loses confidence. Thus dies the sense for the expressiveness of Nature and with it the stuff of which art is made.

Scientific observation as inimical to art.

Summary.

We have now seen how our ideas accompany changes in Nature; how even that which is fixed and unchangeable in Nature may still stimulate ideas of definite processes, and how these ideas develop into distinct types for expressing certain properties. The difference, then, between Nature in motion and in repose seems quite wiped away. In either case form is conceived as an ever-flowing source of ideas of motion. This explains why in an artistic representation we do not at all miss the complete performance of an action as it would occur in Nature. This fact is referable alone to the capacity of Nature at rest for expressing movement. The life of a hand is felt, when it is in repose, in quite the same way as if it were in motion. There is no difference between the two mental processes. The moving hand is but a stronger expression for functional ideas. The resting hand simply waits to act. And here, too, come in the ideas of purpose as expressed by form. In the resting form we can already divine its mode of functioning. The organic body we conceive as a complex of forms bearing the impress of certain functional possibilities. The feeling for organic life depends on our ability to imagine all these forms in action; the perception of organic unity depends on our ability to put our bodily feelings entirely into the body pictured before us.

FIG. 27 (P. 127), MICHELANGELO. ILLUSTRATES THE ARTIST'S PROCEDURE: SCULPTURE IN THE ROUND BEGINS AS A RELIEF.

How completely the representation of a movement depends on adherence to the source of the idea rather than to the appearance as actually perceived in Nature, is demonstrated, for instance, in the picture of a rapidly running dog. In life we actually see the dog's legs only as swiftly moving streaks or shadows. Their form is vague and indefinite, although the head and trunk may remain quite clear. Were the representation dependent on fixing one moment or a few combined moments of action, these legs would always be depicted as indistinct. Such is not the case, however, and here as everywhere it is the idea, not the percept, which is represented. The idea holds to the picture of the dog's legs in repose, merely bringing them into certain positions in which they might be found when running. The result is a clear and satisfactory picture of the dog as well as of his act of running. But this is different from the picture a camera ordinarily gives when it records the percept of a body in motion. We perceive the spokes in a revolving wheel as a blur. Yet the representation overlooks this fact and gives us instead a wheel in the full clearness of repose; and this simply because the image of a wheel at rest which exists in our mind, is stronger than the, real enough, but fleeting image of a wheel in motion. The former we hold to as being the more important for our imagination. We sacrifice the picture of the perception of movement because it is unclear and destructive to our idea of the form of the object. In mere illustration the fleeting image suffices; in an earnest work of art it is a serious

Representation of the idea rather than of the percept.

distraction. The artist's tact must always decide how far he may be justified in making use of such fleeting impressions in preference to clear ideas of form.

We can now understand how a quick movement may be represented even in sculpture, where the form must always be clearly defined.

The plastic representation aims at the ideational content, not at the mere percept.

The plastic representation is not intended to present a picture of an isolated perception, but it must contain those signs of the perception which are necessary for exciting our ideas of the movement. The impression during the momentary act is not given. We are not instantaneous cameras for observing Nature, but beings who combine ideas and who use isolated perceptions only for the purpose of weaving them into an ideational content.

Glancing back over this chapter we may understand how, by means of functional ideas, Nature in motion and at rest becomes for us a living, acting body; and how this life is enabled to express itself in the appearance by means of functional indices. Before this we considered appearance as an expression for space, and treated of its properties as spatial values; here we have considered it purely as an expression of function, and from this point of view we may speak of its functional values. We have recognized the most elemental and essential character of an appearance as consisting in its spatial value. The functional value of which we now speak absolutely presupposes

The relation of the functional to the spatial value.

the spatial; taken apart from this spatial value, it appeals only to a mental process of the observer, failing utterly to present him with Nature's real appearance. But a complete and true Art is manifest only when both these factors are duly regarded, or, more correctly, when the unity of the functional values is conceived as a unity of spatial values. This law has a mighty significance for Art. It is quite possible, for instance, that an artist's sense of life with respect to functional values may lead him to compose a work giving a perfectly true expression of vital functioning and yet, as a spatial unity, being perfectly formless. Putting himself in the position of an actor, he asks, Would I move thus or so in this case? Yet he never asks, How will this movement look to the observer? He presents the movement in question to himself as carried out, but not as seen; as an expression, not as an impression. Now, the visual impression, as we have seen, is the ultimate goal of the artist, and in attaining it quite other than mere kinesthetic factors are operative. Properly speaking, the artistic effect begins only when the expression of movement has been made conformable to the exigencies of the visual impression. Consequently a great number of expressive movements or gestures are quite unavailable to art because as impressions they are unrecognizable. And again others there are which must first be re-arranged to meet the requirements of what we have called the conception of relief.

The crudity of so-called realism in art rests in the fact that this necessary artistic metamorphosis of functional into spatial values has not taken place; the artist has given thought to the truth of his gestures as expressions only. Much that to-day stands for modernity and originality actually signifies no more than an absence of the artistic reconstruction of reality. For example, let us consider here somewhat in detail Canova's novel combination of architecture with sculpture,—a device the use of which appears to have developed since his introduction of it. Canova constructed tombs consisting of a piece of relief architecture attached to a wall. Before this stood a group of figures in the round, which appeared to approach the architectural background as though about to enter the portal of the tomb. The main idea is a picture: certain figures with an architectural background. Such a pictorial idea can be plastically represented only in a relief. The plane of unity should of course lie in front, even though the figures be treated in such high relief as to be full-formed like the figures of a pediment. The architectural background acts, then, as a part of the same relief. To gain this end the whole should, if possible, be given an architectural frame, so that the relief may appear as gradually receding into the depth, and not as a thing merely stuck on a wall. Had the work been so constructed the idea would have attained its right artistic expression, though as a species of art we should have had nothing new.

The crudity of "realism."

But Canova entirely separated his architecture from his figures, with the result that the architectural part has in itself the effect of a monument, while the figures appear to be set up in front without regard to any total spatial impression. The figures, indeed, belong more to the public than they do to the tomb; it seems as though they had just climbed up into their positions. The single bond of unity between the architecture and the figures lies in the suggested act of their entering the tomb. What is here constructed is not a picture seen, but a drama acted out;—the figures are real men and women turned to stone.

Lack of unity in Canova's innovation.

One finds such realism as this spread broadcast in modern monuments. One has but to recall the numerous statue monuments at the bases of which crouch figures in stone or bronze, perchance to inscribe a name, or deposit a laurel wreath. These figures are a direct transition to the observer and reality. There is no definite line drawn between the monument and the public;—as well bring a few stone spectators on the scene! What is new in such a departure as this can well be ranked in the same category with such artistic crudities as wax figures and panoramas.

Its bad effect.

The relation of architecture to sculpture can never be other than of an architectural nature. Either the sculpture serves as a modified structural element of the architecture: in a panel, for instance; or the architecture serves as a kind of support for the sculpture: for example, as a ped-

The solution of the problem.

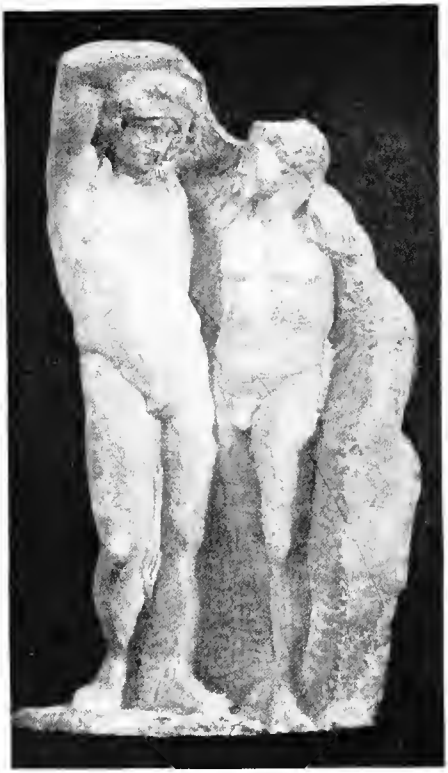


FIG. 28 (P. 129), MICHELANGELO. ILLUSTRATES THE PROGRESSIVE WORK IN STONE.

estal. Architecture and sculpture can never be opposed as factors of equal value in an act or process. If it is desired to oppose them in one representation, then the object of this representation can only be the unitary space which contains them both. Sculpturally this can be represented only in a relief.

The Farnese Bull.

A mistake leading to a similar realistic effect is to be found in the antique group known as the Farnese Bull at Naples. Here again it is the action, the event, which holds together the various sculptural parts, and not, as it should be, the impression of close spatial unity. Such a content should have been cast in relief form in order to produce the highest artistic effect. The artist has failed to transform his full-formed figures together with the volumes of air lying between them into factors of a unitary, ideal space. Instead we find real air spaces holding the various figures apart until these appear like so many stone men and animals, grouped, it would seem, quite accidentally. The artistic unity of a group never depends on a relationship of parts resting solely on the functional or dramatic motive of the piece.* What holds it together is rather its assertion of an ideal spatial unity in contrast with the surrounding space.

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* In contrast with the primacy given in literature to the unity of action.

This barbarous mode of rendering an idea of action through figures in the round rather than expressing it naturally in a relief is often met with nowadays. A partial reason for this deplorable fact is that almost no opportunity is afforded representation in relief. We have but to think of the many ancient monuments let into the walls of churches and other edifices, the many temples, arches of triumph, etc., which required relief sculpture, to realize how infinitely richer was sculptural art in the olden days than in our own. For to-day the relief form of art scarcely exists. Sculpture to the modern man signifies some figure in the round, destined to stand in the center of a public square. And these sad monuments remain almost the only means by which the sculptor may give expression to his artistic ideas. Unless he chooses to sacrifice his ideas entirely, he must bring himself to an impossible mode of treatment. This present-day evil is largely due to the conditions governing the general features of the artist's task. When a monument is to be erected, the artistic form is usually prescribed by laymen, so-called committees, whereas this of all things should be left to the artist. For him it is an impossible situation. The effect upon sculptural art as exhibited in the monuments of to-day is unspeakable poverty of ideas, and eternal repetition of motives. Suppose a poet allowed but one form of composition, or a composer permitted to set to music only certain prescribed scenes of an opera! If all the statues made in Europe during the last forty years were placed side by side, what a show they would make! All of them striv-

The poverty of sculptural art to-day.

ing after something new, all of them pitifully restrained in the bonds of a single form of sculpture, all of them cut off from all connection with architecture or any definite environment. Can such work rank higher than convict labor?

The statue in the open square.

What injects life and variety into art is the new situation. A situation as presented by Nature, when developed into an artistic structure, always leads to new discoveries within the limits set by the natural laws of Art. If the starting point in Nature is lacking, the worker is inclined to seek for novelties which he justifies by what he terms new laws of Art, where two and two make five. But how can one speak of a variety of possible situations for a figure which is condemned to stand forth in empty space—in the middle of a square—just where no figure should be made to stand because of the fact that all aspects of it are given equal value? There is neither front nor rear, and the situation counteracts the pictorial effect of the figure. As the spectator circles about the statue he has at least four views to take in, and this can be to the advantage of only a very few works and of pleasure, in general, only with figures in the nude. When we ask the source of this superstitious regard for the center of a square, we can find only one answer. It is due to the uncultured mind which fancies an open square to be a sort of organic unity with which is associated a feeling of organic symmetry. Accordingly the open space is conceived as something which exists for its own sake, instead of being regarded as a thing seen, of which the artistic right of existence depends entirely on its being seen, and of

which the artistic properties can be treated only from this point of view.

Another misconception which plays a large part in the Art of to-day insists on finding truth in form as the expression of functional values only. From what has been said it is quite clear that this false conception of truth does not relate to the process of artistic representation, but only to Nature as a represented object. The evolution of Art did not begin with any such conception, but rather with the development of form as regards its spatial values. Only gradually has the functional value of form been developed in Art, has, as it were, grown into it. All stages of its development fall within the field of artistic construction and have validity only as a factor thereof. This truth to Nature, cannot rightly be discussed independently of, and apart from, the process of artistic construction. Reverse the evolutionary process, require first correctness of form as a functional value, before the specifically artistic construction begins: the result will be a conception of Nature attended with ideas all perfectly worthless for artistic production; and this, simply because the spatial conception of art was not operative from the beginning. Sad to relate, the training of an artist to-day generally takes this course. And thus is explained the oft-heard complaint that the artist must first unlearn all that he has acquired in the academies before he can produce a work of Art.

A false conception of truth.

The conception of appearance as spatial and functional value also throws light upon the conception of architectural structure. Our relation to space finds in architecture its direct expression. Architecture arouses in us not merely the idea of a possibility of movement, but a definite feeling of space; instead of having to orient ourselves, as we do when confronted with Nature, we are saved that effort by having before us a space that has already been definitely articulated. Furthermore, just as, in sculpture, ideas of movement are stimulated and attain unity of effect through visual impression, so, in architecture, space itself, in the sense of actual form, is converted into a visual impression. To be sure, certain ideas of functional relation, such as those of support and weight supported, develop to give the structure the effect of an acting and living body. These ideas of function are, however, bound up with the demands of the total visual form, and get their values only through definite relations to it. Here too, representations of function do not by themselves produce any artistic form, but merely offer a content still to be formed. The really artistic activity—the activity that presents space—is here, as everywhere, not dependent upon representations of function. On the contrary, indeed, it is only within a certain total effect of space that the functional representation can develop, and can take shape in specific architectural forms like the column and the cornice.

The functional value in architecture.

FIG. 29 (P. 132), MICHELANGELO. THE ARTIST'S IDEA IS COMPREHENSIBLE IN THE BIG MASSES, IRRESPECTIVE OF DETAILS.

In view of the foregoing, a comparison of the Art of earlier times with that of to-day must reveal the undoubted fact that the logic of visual representation was far more highly developed then than it is now; and upon this fact is founded the superiority of earlier Art over ours. In times when Art is enjoying freedom of growth, the natural drift of ideas will follow the regular course of mental organization. Of this dependency on the laws of mental organization the artist is conscious only in so far as he may desire to be logical, and to give true expression to his natural impulses. No influence sways him in his work save that of the natural laws of Art embodied in the artistic Problem of Form. There is as yet no discord between his mental representation and his actual observation. The natural unity of idea and perception still reigns.

The artistic ideas of earlier times.

Other periods may be termed inartistic for the reason that this naiveté no longer exists, and that in its stead false interests and abnormal points of view confuse the natural artistic tendency and deflect it from its course. If we but consider that the artistic idea is in essence nothing more than a further evolution in the natural process of learning to see—a process which each one of us begins to perform in childhood; and if we remember that in childhood visual imagery is most vivid; then we may gain some idea of the sudden end to all this play of fancy which must follow the child's entrance into school. For school turns the much prized hours of youth to activities and disci-

The inimical effects of education.

plines inimical to Art. Deflected thus from his natural course, the child develops his artificial rather than his natural resources, and it is only when he reaches full maturity that the artist learns to think again in terms of the natural forces and ideas which in his childhood were his happiest possession. How many of us have preserved our inborn desire for expression? In most cases only physical ability has survived, and we are ignorant even as to the means and ends of using it. Into what devious by-ways does will lead when only instinct should direct!

The remedy.

To free art from these inimical influences of education, to preserve her from becoming a play-thing of chance and circumstance, one way only is open: To make conscious again the natural purport of the artistic impulse.

The failure of the historic point of view.

The historic point of view from which art is generally considered, has not produced this consciousness of the universal laws of Art. Instead, it has tended to emphasize the differences manifest in artistic production. Consequently Art is treated either as an emanation of personal qualities in various individuals, or as a product of temporal conditions and national traits. This gives rise directly to a false conception of Art as primarily a manifestation of personality, of Art as a product of what in truth is the absolutely non-artistic side of man. The result is simple: no universal measure of artistic value is left. The greatest emphasis is laid on accessory relations, while the real artistic content, obeying its internal laws unaffected by the alterations

of time, is ignored. It is as though a gardener were to let his plants grow under glass vases of different shapes and then ask our attention wholly to the strange forms thus produced, expecting us to forget entirely that the really important thing is the plant itself and its inner mode of life, concerning which these artificial effects of shape and size can give us no true information whatsoever.

In times when Art flourishes all artists are inspired with one desire: to clarify a natural form that it may adequately express a living content. It is an impersonal but at the same time a comprehensive picture of Nature which the true artist strives after. The personal element plays a part only in so far as it possesses an artistically objective Nature expressing itself according to a general law of Art. That is to say, such individual conceptions of Nature as may seem to give Art a new content have artistic value only when they conform to the natural laws of Art in so far as they present a new variation of the fundamental theme. Such things as personal caprice, subjective arbitrariness, the putting on of intellectual airs, are but signs which demonstrate that the artist's work has lost its natural sound purport.

The true artistic impulse.

If one would speak, then, of a mission of Art, it can be no other than this: in spite of all temporal eccentricities, to reestablish and make felt the sound and natural relations between our thought and sense activities.

The mission of art.

VII

SCULPTURE IN STONE

It is evident that the material which the artist uses in his representation must influence his technical method. It therefore becomes of primary importance to note whether the material favors a method of execution parallel to that of conception. If not, the mechanical work will be striving in other directions than the pictorial conception, and the hindrance thus offered must be overcome, or else the natural conception of the artist will suffer and degenerate. On the other hand when the material is of such a nature that the artist can develop his representation directly in accordance with the requirements of his conception, i. e., when the material conditions correspond to those attending the growth of the conception, then the technical procedure will be making directly for a unitary conception. The very process then strengthens and gives life to the idea, and, as a mere matter of course, the elementary artistic problems become immediately apparent. Such a salutary process is afforded by direct cutting in stone. It will accordingly be worth our while to go into this matter more closely.

The influence of the material on sculpture.

The evolution of sculpture.

Sculpture has undoubtedly evolved from drawing; by giving depth to a drawing we make of it a relief, and this relief may be regarded as the animation of a surface. Likewise primitive sculpture in the round may be easily looked upon as a result of surface drawings carved into a block. Thus the ancient Egyptians carved crouching figures out of blocks of stone, maintaining in the process the original bounding surfaces of the stone, yet converting it into members of a crouching figure. The stone was first roughly cut into a simple general form, and this form was then modified according to the figure intended. The block is thus changed into a human figure; and, indeed, from a certain distance we might readily take such a block for such a figure. In the statue the stone is no longer a stone, but continues to exist, nevertheless, as the total form of the figure. This unity of form is perceived by the eye in the same way as is the unitary field of vision in a drawing. The original block gave the illusion of a crouching figure; the crouching figure irresistibly suggests the original block.

The wholesome influence of architecture on sculpture.

Architecture creates simple geometrical solids and makes of them elements of construction. The sculptor, in animating these according to the process above explained, must respect their primitive form. Sculpture of this sort is not only architecturally significant, but is also important from a purely sculptural point of view. The plastic representation remains enclosed in a simple, comprehensible total form—a fact

which insures to the eye unity and repose. In this way architecture has had a very wholesome influence on plastic representation.

Still it is easy to understand that in time sculpture should have emancipated itself from this architectural bond, and that the necessity of a regular and compact total form should have ceased to exist. In the absence of total forms which had objective architectural significance with outlines thereby determined, there arose a new problem. Even though a free moving figure in the round may be considered as contained within a certain total form, still it is no longer possible, as it was in the case of architectural sculpture, to judge beforehand just how the figure is to be placed within the stone. The three-dimensional relations of the different aspects of the figure can scarcely be decided beforehand. Therefore, a preparatory roughing out of the total form is impossible. One way alone stands open: to start with one view in mind and let the others arrange themselves as necessary consequences of this main aspect. The sculptor is accordingly forced to base his three-dimensional conception on a visual or pictorial conception and to lay out his work with this only in view.

The problem which arises when sculpture is freed of architectural significance.

First of all, the design must be drawn upon the main surface of the stone. It is well to select this surface as flat as possible so that the effect may be that of an ideal plane rather than of something already existing as form. The artist, then, is able to fill this plane at will with form. With the

The process of work in stone.

depth measurements of the stone he need concern himself only so far as to assure himself that his figure will find adequate space within the block. The nature of the conditions requires that the design should be defined at once, instead of delaying a clear exposition until a later stage of the work. Thenceforward the artist's procedure is the same as in beginning a relief. A figure forms in his fancy which, through its principal masses, already expresses itself distinctly in this first plane. If the design is clearly comprehensible at this stage a firm basis is laid for the entire process of work, and for all succeeding points of view. It follows that the artist is forced to conceive at the start what is to lie in the first layer and what in the next. In order to represent the prominent masses of the first layer at once in clear pictorial or two-dimensional relations, the design should be so arranged that several of the prominent parts of the figure fall there; for instance: the head, a hand, a knee, etc., selected in accordance with the pose of the figure.

The work begins as a relief.

As the artist hews his design into the stone, removing that which lies outside its contours, and, at the same time working out the inner forms which are thus revealed, he begins to consider the actual depth relations of the figure in the round. This is possible only when the judgment based on a direct front view of the figure is assisted by observing it also from the sides. In this way measurements of the third dimension are controlled by converting them into measurements in the plane of the retinal image. But, since at first this is only to a slight degree possible, the work naturally tends to assume the character

of a relief and to proceed at the beginning rather in accordance with the eye's sensitivity for depth as based on light and shade. Actual depth relations, which are controlled always with difficulty, come only gradually into existence. It can therefore be said that all depth relations of the actual form tend to exist at first only in relief.

The exposure of the image in the stone is controlled by the eye; i. e., the imagination which assists in this exposure constructs an appearance such as might be seen from a distance. It is evident that this image will at every stage be unitary, especially in the sense that an interdependence of planes and a pictorial unity from the main aspect are maintained, although the actual form, when viewed from any other point, has, as yet, no such unity.

Methods of proceeding into the stone.

The experience and skill of the artist will, in the first phase of his work, decide for him whether he should proceed by many or few stages to reach the three-dimensional proportions of the actual form. In the one case the advance is gradual, from plane to plane as the planes succeed each other. His imagination thus stimulated, the artist grasps more and more clearly the further development of the forms which he is representing. In the other case the actual relations of the three-dimensional proportions are approached at the beginning. From the outset the artist applies a larger scale to his kinesthetic ideas of the figure.

It is important for the process, and a thing not to

be neglected, that the artist should at once conceive and hew out of the stone all that appears to the eye at one time in a certain plane. Only after the first plane has been perfectly exposed may he enter into the next. The nature of the technical process demands that the design be freed of its stone surroundings uniformly with respect to the main aspect before the work can proceed into greater depths. If the artist proceeds irregularly into the depth, holes appear in the block which confuse the image; while the superfluous stone interferes with the chisel. Michelangelo has significantly described the progressive work in stone thus: One must imagine the figure as though it were lying under a body of water which is allowed gradually to run off, thus permitting the figure to come little by little above the surface, until at length it lies completely exposed. A form thus appears before our eyes, limited by the manner of conception, yet characterized by the fact that its detail forms are thought of as parts of related planes. In this way these details acquire an inner relationship which exists only for the eye and is in no way dependent on organic causes. This inner relationship is of the greatest significance for the natural process of perception. Stage by stage the image is brought to the eye in a definite arrangement of large and simple masses. This inner relationship, as we already know, constitutes the sculptural conception of form; through it the figure possesses a form adapted to, and rhythmically arranged for, perception by the eye.

Further considerations with respect to planes.

How the technical process influences the develop-

ment of the conception, will appear still more clearly when we contrast direct work in stone with clay modeling. In modeling, an armature is first constructed, and covered with clay until it corresponds approximately with the image which the artist is projecting. The artist sets out, then, from an existing object and develops it gradually outward and toward himself. No ready-formed total space exists previous to his work. All spatial form must be created from the beginning. Accordingly the procedure is not one from a general conception of volume, as it is in stone work, but instead starts with an actual presentation of an object. Furthermore, since the clay must be laid up all about the armature, the artist in his imagination must follow around the figure and consider every possible view. So far as the technical process is concerned, a main aspect is not given, much less imposed. On the contrary, the mode of work eliminates the necessity for such a thing. The shaping imagination which accompanies the process of modeling, is based upon, and abides by, the actual form of the object as it is displayed on all sides. There does not result any suggestion of a space enclosing the object—of what we have called its **total space.**

Contrast of stone cutting and clay modeling.

When we consider that the imagination is actually being formed during the very act of representation, we can readily understand how differently the artist must be influenced by direct cutting in stone and by modeling in clay. Of course, it must be understood that we speak only of

Disadvantages of modeling.

FIG. 30 (P.138), MICHELANGELO. THREE-DIMENSIONAL CONTENT TRANSLATED INTO A PICTORIAL PRESENTATION.

the constraint which the process puts upon us. The formation of a general conception of volume by means of an illusion is never impossible. In modeling, however, such an illusion is indispensable, whereas in stone work the block before us represents a general volume which is real.

Modes of conception in carving and modeling.

In stone carving the laying out of the big masses in various planes must precede the working up of details. This forces the artist to make his idea comprehensible in these masses. He seeks, therefore, a design that may be exhibited clearly and expressively from the beginning. He has an image in large features, within which the details may lie hidden, contained always in a positive volume, as though parts of a general element or shrouded in darkness. In this way the existence of form not yet carved out is constantly suggested to the imagination. The conception then remains natural—as in Nature herself a portion of a figure is sometimes illuminated while the rest remains indiscernible in darkness.

In clay modeling this is all different; that which is not modeled is entirely lacking as volume. No general element of clay exists beyond that which is modeled. On the contrary, the actual air space which surrounds the work contrasts with it so as to lend it the quasi-appearance of a finished form. To the imagination the unfinished is offered as though it were finished. In stone work, the unfinished image is contrasted only with unhewn stone, an as yet unformed element out of which the partially completed form seems to evolve as something growing, thereby constantly sug-

gesting a natural development. As it continues to thrust itself further out of the volume, the image still appears but relatively complete against its stone background; and it is wise to preserve this background as long as possible in order that this same imaginative attitude may be maintained.

The more masterful the development of the process of carving in stone, the more definite and purposeful will be all the forms that appear in the stone. A natural impulse demands that out of the general chaos positive form shall present itself as fast as possible, thus clearing the way for succeeding forms. Consequently the artist very soon brings his image to the light of full comprehensibility. Herein lies the necessity for a clear and positive conception of the actual form from the very beginning of the work.

Treatment of detail forms.

The general forms which are first given to the stone must, as we have observed, be so represented that they will contain all detail forms which may later appear. At the beginning these details come to the surface only in so far as they may influence the general form. In a given position of the figure, there exist certain detail forms which act only as an enrichment of the general form; others, on the contrary, play very expressive parts in the whole. That is to say, at a distance the former fuse into the general masses while the latter maintain their importance as form contrasts. The parts to be played by the details must be decided in the imagination when the arrangement of the general form is first considered and, indeed, must be decided with reference to their effects as seen from a distance. In this sense the three-

dimensional presentation of the image is always referred to the pictorial conception, since it is evident that we must set out from relatively simple factors and we cannot represent all at once. The more developed the artist's power, the more precise will be the three-dimensional ideas which he converts into simple or related pictorial conceptions. If this power is great, the image unfolds itself from the very start in quite simple but precise forms. The image of the representation then consists in nothing other than simple, exact pictorial conceptions. As the figure proceeds in this manner from a pictorial impression into the depths of the stone, the side views, and, at length, the back view develop as necessary consequences.

The value of modeling in clay.

From this it appears that the sculptor in stone, starting from a pictorial, i. e., visual idea, proceeds to realize it as a kinesthetic idea, an idea of movement. In modeling, on the contrary, it is the kinesthetic idea which is first represented. Only after this has been done can the effect as a pictorial impression be judged. The pictorial impression then plays the critic's part: it has not been a factor in the conception. Furthermore, whenever there is actually present a real something, its reality is inimical to an unrealized conception. It is far more difficult to alter the clay when it has once assumed a definite form than it is to make a fresh start in the representation of a complete conception. Modeling in clay has its value as a method of study from Nature to increase one's conception of actual forms, or to develop detailed knowledge of form in general. But the process is not adapted to the development of a work of art which will

be harmonious as a pictorial representation. A process favorable to such harmony must take an opposite course, and must lead to the actual form from the pictorial conception which the artist desires the spectator to receive.

Advantages of a clear-cut pictorial conception.

The more perfectly developed the pictorial, or visual, conception, the easier and simpler becomes the work of representation. A sound artistic development clears up the conception so much that the working process and its material difficulties are more and more diminished. The conception strives to reduce the image to its simplest factors in order that the representation need give only these. A clear, simple method is an evidence of long previous practical experience. Yet, such a method once established, the beginner is forced to form and simplify his conception in accordance with it, and to reduce his mode of representation to those simple means which are naturally required. His ability of artistic conception develops, then, as a result of his mastery over the process of representation. His imagination undergoes an artistic metamorphosis. This constitutes the great significance of direct cutting in stone. Skill in handling the chisel, mere technical ability to execute in stone, is not referred to in speaking of this intrinsic value of the direct cutting.

The general law of unity in space.

We have repeatedly noted that this hewing out of the stone frees the figure from the block in such a manner that, although the block disappears materially, it remains, nevertheless, as a unity in our perception because of the fact that prominent parts of the figure combine to form outer

planes which still represent the simple block. Thus, in the most intimate manner, the process is welded together with the pictorial metamorphosis attending the presentation of the actual form. The general law and immutable condition of the artistic conception is unity in space. The actual presentation of the object is the variable factor. The wealth of such actual presentations offered to the artist by Nature is unlimited. His choice among them will depend upon their adaptability as spatial units. Works of art will always be combined of these two elements: objective reality and subjective unity; and the manner of their combination is what characterizes artistic individuality.

The example of Michelangelo.

The artist who, aside from the Greeks, has most consistently developed his mode of artistic conception in direct relation with his process of representation is Michelangelo. With him conception and representation are one. His work is characterized by the greatest possible employment of the stone volume, together with an extraordinarily enclosed total appearance. His presentation of an object fills its space unit as compactly as possible, avoiding all unoccupied space. The less the stone volume cut away, the more concentrated, rich, one might say nourishing to the imagination, becomes the process of representation. Outreaching gestures and far-extending limbs are banished as diffuse; while, within his concentrating imagination, bodily movements originate, which, without loss of space or energy, occupy as little space as possible. Pressed close to the torso, they fill out the block compactly, involving everywhere a turning and bending of joints.

Thus his strong feeling for spatial unity carried him far from all ordinary gestures, because he could not make these the shortest expression for his needs. Instead, he reached a conception of form which is explained only by reference to his artistic impulse. With passionate consistency his imagination of bodily form was subjected to this impulse and so created a new world of bodily form. He brought to light from out Nature a wealth of movements which, hitherto, had been little if at all observed. In this sense he developed an infinite feeling for life and, consequently, his movements display the greatest variety within the smallest possible space. This we must consider a lasting enrichment to the world of conceptions, together with a permanent simplification in the method of representing a space unity. This artistic point of view is so exclusively the standard of his figures that his world of movement is incomprehensible from any other. The isolation and solitude of his manner of conception place his figures far from all ordinary human associations and give them unapproachable grandeur; yet, paradoxically, at the same time, by the incredible directness of the process of their creation, they are brought infinitely close to us.

Michelangelo's artistic impulse.

The effect of the artistic coherence of his figures was so strong that the movements represented ceased to be regarded by the spectator as the outgrowth of some mental process on the part of the person represented, or as expressing that person's action. The functional value disappeared in the spatial. Thus the sense for natural

After-effects of Michelangelo's innovations.

gesture declined, and Michelangelo's successors, when they attempted to make dramatically expressive the new range of motions that he had revealed, fell into affected and exaggerated gestures.

That Michelangelo and his predecessors could pursue this new principle of compactness so far with a certain onesidedness is explained by the fact that their sculpture was not intended for the open air, but for the interior of buildings. Michelangelo's figures were not to be contrasted with the open sky, nor were they to be viewed from any great distance. Consequently the clearness of his figures was not dependent upon the clearness of their outlines. With the Greeks the open air condition was of greater importance, and this forced them to adopt a freer and looser arrangement of limbs in their figures. Although their sculpture is likewise conceived in clear spatial units, still, by reason of the looser arrangement, spatial unity is not felt as a material quality, as the total space occupied by the stone block, but merely as a harmony in the act of perception. Turning again to a work like Michelangelo's Madonna in the Medici Chapel, we find there, too, unity obtained through different, but equally universal means, the total three-dimensional content having been completely translated into a pictorial presentation. Thus all differences of time, circumstance, or individuality are effaced before the general and eternal laws which govern and always govern artistic creation.

Contrasting the work of Michelangelo and the Greeks.

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